NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Agenda
# Board of Trustees

February 15, 2024 | 8:30 a.m.-11:30 a.m. Central
In-Person

The Houstonian Hotel Houston
111 North Post Oak Lane
Houston, TX 77024
Conference Room: Grand Ballroom (lower level)

**Virtual Attendees**
Webcast Link: Join Link

**NERC Board of Trustees**

| | | |
|---|---|---|
| Kenneth W. DeFontes Jr. - Chair | Jane Allen | Colleen Sidford |
| George S. Hawkins – Vice Chair | Robert G. Clarke | Larry Irving |
| Suzanne Keenan | Susan Kelly | Robin E. Manning |
| Jim Piro | Kristine Schmidt | James B. Robb – President and Chief Executive Officer |

**Call to Order**

**NERC Antitrust Compliance Guidelines**

**Introduction and Chair's Remarks**

**Consent Agenda – Approve**

1. **Minutes***
   a. December 12, 2023 Meeting
2. **Committee Membership and Charter Amendments***
   a. Reliability and Security Technical Committee Membership and Charter Amendments
   b. Reliability Issues Steering Committee Membership
   c. Standards Committee Charter Amendments
   d. Compliance and Certification Committee Membership
3. **Governance Documents Amendments***
   a. System Operator Certification Program Manual and System Operator Certification Program Manual Mapping Document
   b. CCCPP-012-2, Monitoring CCC Participation in NERC's Audits of CMEP Programs

## Regular Agenda

4. **Remarks and Reports**
   a. Remarks by Thad Hill, President and CEO, Calpine Corporation
   b. Remarks by Pat Wood III, CEO, Hunt Energy
   c. Remarks by Patricia Hoffman, Principal Deputy Assistant Secretary, Office of Electricity, DOE
   d. Remarks by Derek Olmstead, President and CEO Alberta MSA, CAMPUT Representative
   e. President's Report
   f. Report on the February 13 and February 15, 2024 Closed Meetings
5. **Election and Appointment of Board Chair and Vice Chair, Board of Trustees Committee Assignments and NERC Officers – Approve**
6. **Board Committee Reports**
   a. Corporate Governance and Human Resources
   b. Compliance
   c. Finance and Audit
      i. 2023 Year-End Unaudited Summary of Results – **Accept**
   d. Enterprise-wide Risk
   e. Technology and Security
   f. Nominating
   g. Report by Sue Kelly on Standards Quarterly Activities
   h. Report by Rob Manning on RSTC Quarterly Activities
7. **Semi-Annual Reports to the Board**
   a. Personnel Certification Governance Committee*
      i. 2024 Work Plan – **Approve**
   b. Standards Committee*
      i. 2024-2026 Standards Committee Strategic Work Plan – **Approve**
   c. Compliance and Certification Committee*
      i. 2024 Work Plan – **Approve**
   d. Reliability and Security Technical Committee*
      i. 2024 Strategic Plan – **Approve**
   e. Reliability Issues Steering Committee*
   f. North American Energy Standards Board
   g. North American Transmission Forum*
   h. North American Generator Forum*
8. **Standards Quarterly Report and Actions***
   a. Project 2022-01 Reporting ACE Definition and Associated Terms* - **Adopt**
   b. Project 2021-07- Extreme Cold Weather Grid Operations, Preparedness, and Coordination* – **Adopt**

**BREAK – 15 MINS**

9. **Other Matters and Reports**
   a. Input Letter and Member Representatives Committee Meeting – **Discussion**
   b. Proposed Revisions to the Rules of Procedure to Address Unregistered IBRs* – **Approve**
   c. Year-End Review of the Achievements of the 2023 NERC Work Plan Priorities* – **Update**
10. **Other Matters and Adjournment**

*Background materials included.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Draft Minutes
# Board of Trustees

December 12, 2023 | 11:00 a.m.–12:00 p.m. Eastern
Hybrid Meeting

NERC DC Office
1401 H Street NW
Washington, D.C. 20005

## Call to Order

Mr. Kenneth W. DeFontes, Jr., Chair, called to order the duly noticed open meeting of the Board of Trustees (the Board) of the North American Electric Reliability Corporation (NERC or the Corporation) on December 12, 2023, at 11:00 a.m. Eastern, and a quorum was declared present.

Present at the meeting were:

**Board Members**
Kenneth W. DeFontes, Jr., Chair
George S. Hawkins, Vice Chair
Jane Allen
Robert G. Clarke
Larry Irving
Suzanne Keenan
Susan Kelly
Robin E. Manning
Jim Piro
James B. Robb, President and Chief Executive Officer
Kristine Schmidt
Colleen Sidford

**NERC Staff**
Tina Buzzard, Assistant Corporate Secretary
Manny Cancel, Senior Vice President and Chief Executive Officer of the E-ISAC
Erika Chanzes, Manager of Business Planning
Stephen Coterillo, Engineer-II, Reliability Assessment
Howard Gugel, Vice President, Compliance Assurance and Registration
Kelly Hanson, Senior Vice President and Chief Administrative Officer
Stan Hoptroff, Vice President, Business Technology
Soo Jin Kim, Vice President, Engineering and Standards
Mark G. Lauby, Senior Vice President and Chief Engineer
Kimberly Mielcarek, Vice President, Communications
Darrell Moore, Director, Situation Awareness and Personnel Certification/Credential Maintenance
John Moura, Director, Reliability Assessment and Performance Analysis
Mark Olson, Manager, Reliability Assessment
Lauren Perotti, Assistant General Counsel

Sônia Rocha, Senior Vice President, General Counsel, and Corporate Secretary
Liz Saunders, Vice President, People and Culture
Janet Sena, Senior Vice President, External Affairs
Andy Sharp, Vice President and Chief Financial Officer

## NERC Antitrust Compliance Guidelines

Ms. Buzzard directed the participants' attention to the NERC Antitrust Compliance Guidelines included in the advance agenda package and indicated that all questions regarding antitrust compliance or related matters should be directed to Ms. Rocha.

## Introduction and Chair's Remarks

Mr. DeFontes welcomed all of the attendees to the meeting and noted the full agenda.

## Consent Agenda

Upon motion duly made and seconded, the Board approved the consent agenda as follows:

**Minutes**

The draft minutes for the October 23, 2023 and August 17, 2023 meetings were approved as presented to the Board at this meeting.

**Committee Membership**

**Compliance and Certification Committee Membership**

**RESOLVED**, that the Board hereby appoints the following individuals to the Compliance and Certification Committee, each for a three-year term from January 1, 2024 through December 31, 2026:

- Erin McClatchey, Avista Corporation, representing Investor-Owned Utility
- Scott Tomashefsky, Northern California Power Authority, representing State/Municipal
- Patricia Robertson, British Columbia Hydro, representing Federal/Provincial Utility/Federal Power Marketing Administration
- Ajay Garg, Hydro One, representing Federal/Provincial Utility/Federal Power Marketing Administration
- Mark E. Buchholz, Western Area Power Administration, representing Federal/Provincial Utility/Federal Power Marketing Administration
- Patti Metro, National Rural Electric Cooperative Association, representing Transmission Dependent Utility
- Jodirah (Jody) Green, ACES Power, representing Electricity Marketer
- Erin Cullum Marcussen, Southwest Power Pool, Inc., representing ISO/RTO
- Zachary Heidemann, Michigan Public Service Commission, representing U.S. State
- Ellen Watkins, Sunflower Electric Power Corporation, Member At large
- Tim Self, Southern Company, Member At Large
- Mahmood Safi, Vistra Corp., Member At Large
- Rob Robertson, Leeward Renewable Energy, Member At Large

- Mark Diggs, American Electric Power (AEP), Member At Large
- Derek Olmstead, Market Surveillance Administrator (Alberta), Canadian Provincial
- Claudia Astudillo, Canada Energy Regulator (CER), Canadian Federal

**FURTHER RESOLVED,** that the Board hereby appoints the following individuals as officers of the Compliance and Certification Committee, each for a two-year term from January 1, 2024 through December 31, 2025:

- Chair: Scott Tomashefsky, Northern California Power Authority
- Vice Chair: Silvia Parada Mitchell, NextEra Energy Resources, LLC

**Personnel Certification Governance Committee Membership**

**RESOLVED**, that the Board hereby appoints the following individuals to the Personnel Certification Governance Committee, each for a two-year term from January 1, 2024 through December 31, 2025:

- Michael Hoke, PJM
- Michael Sandidge, PECI
- Dan Morse, FRCC

**Standards Committee Membership**

**RESOLVED**, that the Board hereby appoints the following individuals as officers of the Standards Committee, each for a two-year term from January 1, 2024 through December 31, 2025:

- Chair: Todd Bennett, Associated Electric Cooperative, Inc. (formerly of Segment 3)
- Vice Chair: Troy Brumfield, American Transmission Company (formerly of Segment 1)

## Regular Agenda

**Working Capital and Reserves Policy**

Mr. Sharp presented the proposed revised Working Capital and Reserves Policy, which was included in the advance agenda materials. He explained that many of the proposed changes to NERC's policy were prompted by the recent Federal Energy Regulatory Commission ("FERC") order approving modifications to Section II.7(b)(ii) of the Settlement Agreement between the FERC Office of Enforcement and NERC related to the FERC Office of Enforcement's findings and recommendations arising out of its 2012 performance audit of NERC. Mr. DeFontes noted that Ms. Kelly recommended two further changes to the proposed revised policy following Finance and Audit Committee approval which are reflected in the advance agenda materials. After discussion, and motion duly made and seconded, the Board approved the following resolution:

**RESOLVED**, that the Board, upon recommendation of the Finance and Audit Committee, hereby approves the revised Working Capital and Reserves Policy, substantially in the form presented to the Board at this meeting.

**Project 2021-07, Extreme Cold Weather Grid Operations, Preparedness, and Coordination Update**

Mr. DeFontes added this item to the agenda to provide remarks on the development of revisions to the EOP-012 Reliability Standard to address directives from FERC in its February 2023 order approving Reliability Standard EOP-012-1 and EOP-011-3. Mr. DeFontes reported that the most recent ballot of the revised EOP-012-2 standard failed to meet with industry approval, and as a result, NERC is now in danger of not meeting FERC's February 2024 deadline for a revised standard.

In his remarks, Mr. DeFontes noted that staff is seeking further procedural waivers from the Standards Committee to complete one more ballot in January; however, if usual stakeholder process fails to produce a responsive standard in a timely way, the Board will have no choice but to invoke its special rule to address regulatory directives, Rule 321 of the NERC Rules of Procedure, for NERC to meet its regulatory obligation. He recalled that this special rule has been in place for many years to address a situation where NERC's usual stakeholder process fails to produce a standard addressing a regulatory directive. Mr. DeFontes called on NERC staff to tentatively schedule a special call of the Board to invoke this special rule, to take place after any requested procedural waivers are not granted or following a January failed ballot, so the Board may take action promptly once it is clear that Board action is necessary.

Mr. DeFontes thanked NERC's stakeholders for their participation in this important effort to date, and he stated that the Board hopes NERC's stakeholders will rise to the occasion once again and produce a responsive standard through the usual stakeholder process. Ms. Kelly and Mr. Hawkins added supportive comments.

**WECC Regional Reliability Standard VAR-501-WECC-4**

Ms. Kim presented proposed regional Reliability Standard VAR-501-WECC-4 – Power System Stabilizer, explaining that the WECC developed the proposed regional standard following a periodic review and proposes only non-substantive changes to the currently effective regional standard. After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

> **RESOLVED**, that the Board hereby adopts the proposed regional Reliability Standard VAR-501-WECC-4, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that the Board hereby approves the Violation Risk Factors and Violation Severity Levels for the proposed regional Reliability Standard, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that the Board hereby approves the effective date for the proposed regional Reliability Standard, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that the Board hereby approves the proposed retirement of regional Reliability Standard VAR-501-WECC-3.1, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that NERC management is hereby authorized to make the appropriate filings with ERO governmental authorities and take such further actions and make such further filings as are necessary and appropriate to effectuate the intent of the foregoing resolutions.

**Project 2020-04 Modifications to CIP-012**

Ms. Kim presented proposed Reliability Standard CIP-012-2, highlighting that the proposed standard addresses a FERC directive from Order No. 866 to require responsible entities to develop one or more plans to implement protections for the availability of communication links and data communicated between Bulk Electric System Control Centers. After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

> **RESOLVED**, that the Board hereby adopts the proposed Reliability Standard CIP-012-2, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that the Board hereby approves the Violation Risk Factors and Violation Severity Levels for the proposed Reliability Standard, as presented to the Board at this meeting.
>
> **FURTHER RESOLVED**, that the Board hereby approves the associated implementation plan for the proposed Reliability Standard, as presented to the Board at this meeting.

**FURTHER RESOLVED**, that the Board hereby approves the proposed retirement of Reliability Standard CIP-012-1, as presented to the Board at this meeting.

**FURTHER RESOLVED**, that NERC management is hereby authorized to make the appropriate filings with ERO governmental authorities and take such further actions and make such further filings as are necessary and appropriate to effectuate the intent of the foregoing resolutions.

**2024-2026 Reliability Standards Development Plan**

Ms. Kim presented the 2024-2026 Reliability Standards Development Plan, noting that NERC is required to prepare such a plan under Section 310 of the NERC Rules of Procedure. She highlighted that certain changes were made following the issuance of Order No. 901 to update project prioritization consistent with that order. After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

**RESOLVED**, that the Board hereby approves the 2024-2026 Reliability Standards Development Plan, substantially in the form presented to the Board at this meeting, subject to the addition of any new Standard Authorization Requests or directives that are received prior to submission to the ERO governmental authorities.

**FURTHER RESOLVED**, that NERC management is hereby authorized to make the appropriate filings with ERO governmental authorities and take such further actions and make such further filings as are necessary and appropriate to effectuate the intent of the foregoing resolution.

**2024 NERC Work Plan Priorities**

Ms. Hanson presented the proposed 2024 NERC work plan priorities, highlighting how these priorities are developed based on the work of NERC's stakeholder committees and processes. She noted that the 2024 work plan priorities are NERC's goalpost for executing Year 2 of the 2023-2025 Plan to address four strategic areas of focus: energy, security, agility, and sustainability.

The Board discussed the proposed 2024 work plan priorities. After discussion, and upon motion duly made and seconded, the Board approved the following resolution:

**RESOLVED**, that the Board hereby approves the 2024 ERO Enterprise Work Plan Priorities, substantially in the form presented to the Board at this meeting.

**2023-2024 Winter Reliability Assessment Overview**

Mr. Moura introduced the 2023-2024 Winter Reliability Assessment ("WRA"), noting the increasing importance of addressing electric/natural gas interdependencies. Mr. Coterillo presented the key findings. He reported that a large portion of North America remains at risk of insufficient electricity supplies during peak winter conditions and, while industry cold weather preparations are on a positive trend, generators and fuel supplies in warmer zones are still likely to experience performance issues in freezing temperatures. Mr. Coterillo then presented the key recommendations, including: (i) for entities to implement the essential actions from NERC's May 2023 Level 3 Alert, implement fuel surveys and monitor adequacy of fuel supply, and take steps to account for reserve shortfalls; and (ii) for regulators to support public appeals for reduced consumption and consider regulatory waivers when needed to help support reliability.

The Board discussed the 2023-2024 WRA, including how this report underscores the need for strong Reliability Standards to address cold weather preparedness and operations. Mr. Robb noted that, while the report provides recommendations that can be implemented quickly, the longer term solutions will be structural in nature.

**2023 Long-Term Reliability Assessment Overview**

Mr. Moura introduced the 2023 Long-Term Reliability Assessment ("LTRA"), noting the importance of transmission to the long-term reliability of the grid. Mr. Olson provided a summary of the report and highlighted the key findings, including a continuing trend of demand growth outpacing resources and that a growing number of areas face capacity and energy risks in the next ten years. He noted that a positive trend in transmission development supports a reliable resource mix transition, and that ERO reliability assessments should evolve to evaluate transfer capability and benefits to reliability. Mr. Olson reviewed emerging issues discussed in the LTRA and recommendations for future action, including managing resources, expanding the transmission network, adapting markets and processes for a more complex power system, and strengthening relationships among reliability stakeholders. He noted that the LTRA includes a discussion of work that is underway to address identified issues. The Board discussed the 2023 LTRA, including NERC's plan for communicating the identified risks and issues to stakeholders.

**NERC Alert Level 3 – Essential Actions to Industry**

Mr. Moore provided an update on the results of the NERC Level 3 Alert Essential Actions to Industry regarding winterization practices issued in May 2023, which were recently published in an anonymized public report. He reported that the responses indicate freezing conditions remain a reliability issue for generators. Mr. Moore also reported that, according to the responses, the vast majority of generator owners have calculated or will expect to calculate their Extreme Cold Weather Temperature for all of their owned capacity, and that the majority of those generator owners expect that all or nearly all of their capacity will be capable of operating at that temperature. He noted areas for further investigation, including understanding wind farm issues and why some entities have not developed updated operating plans prior to this winter. Mr. Moore also discussed ongoing efforts to improve reliability in cold weather conditions.

**Other Matters and Adjournment**

There being no further business, and upon motion duly made and seconded, the meeting was adjourned.

Submitted by,

Sônia Rocha
Corporate Secretary

Agenda Item 2a
Board of Trustees Meeting
February 15, 2024

# Reliability and Security Technical Committee (RSTC) Membership and Proposed Charter Amendments

## Action
Approve

RSTC Membership Slate
RSTC Charter Amendments

## RSTC Membership Summary
The RSTC recommends that the Board of Trustees (Board) approve the appointment of the following representatives for the terms listed.

| Sector Elected Members | |
|---|---|
| 1. Investor-owned utility | Vinit Gupta (ITC) 2024-2026 |
| 2. State/municipal utility | David Grubbs (Garland) 2024-2026 |
| 3. Cooperative utility | Nathan Brown (GSOC) 2024-2026 |
| 4. Federal or provincial utility/Federal Power Marketing Administration | Robert Reinmuller (Hydro One) – 2024-2026 |
| 5. Transmission dependent utility | John Lemire, NCEMC – 2024-2026 |
| 6. Merchant electricity generator | Brett Kruse (Calpine) 2024-2026 |
| 7. Electricity Marketer | Jodirah Green (ACES Power) – 2024-2026 |
| 8. Large end-use electricity customer | Seat converted to At-large – 2024-2026 |
| 9. Small end-use electricity customer | Seat Converted to At-large – 2024-2026 |
| 10. Independent system operator/ regional transmission organization | Ahmed Maria (IESO) – 2024-2026 |
| 12. State Government | Seat converted to At-large – 2024-2026 |
| **At-large Members** | |
| Venona Greaff | Oxy – 2024-2026 (converted Sector 8) |
| Wayne Guttormson | SaskPower – 2024-2026 (converted Sector 9) |
| Dede Subakti | California ISO – 2024-2026 (converted Sector 12) |
| David Mulcahy | Illuminate Power Analytics, LLC – 2024-2026 |
| Stephen George | ISO New England– 2024-2026 |
| Monica Jain | SCE – 2024-2026 |
| Truong Le | ERCOT - 2024-2026 |
| Ryan Quint | Elevate Energy Consulting – 2024-2026 |

| Non-voting Members | |
|---|---|
| United States Federal Government (2) | David Ortiz, FERC – 2024-2026 |
| Provincial Government (1) | Catherine Ethier, Ontario Energy Board – 2024-2026 |

**RSTC Proposed Charter Amendments**

## Background

In November 2019, the Board approved the creation of the Reliability and Security Technical Committee (RSTC). The purpose of this committee is to replace the former Operating, Planning, and Critical Infrastructure Protection committees to improve efficiency and effectiveness. The initial RSTC Charter was also approved by the Board at this time.

In September 2021, the RSTC approved initial revisions to the Charter, which were then approved by the Board in November 2021. Every two years, the RSTC reviews the Charter to determine whether any revisions are appropriate. During the latest review, certain administrative and clarifying improvements were identified that could further support the efficient operation of the RSTC.

In September 2023, NERC staff requested comments on the draft revised Charter. Comments proposing further administrative refinements were provided through October 20, 2023, and were incorporated into the final Charter document.

## Summary

The posted version of the Charter reflects administrative improvements and clarifications based on lessons learned over the past two years. In particular, these revisions reflect the following:

- Section 2 (RSTC Functions): Reference to the RSTC's efforts to prioritize work streams and reflects the RSTC's plan to present annual updates to the Strategic Plan at the Board's February Meeting.
- Section 3 (Membership):
  - The outgoing Chair may remain a non-voting member of the RSTC for one year to support continuity (unless that individual is elected to represent a sector, in which case the relevant term for sector representation would apply).
  - For purposes of the Nominating Subcommittee (NS), the RSTC vice-chair shall recuse him/herself: (a) unless not seeking reelection; or (b) until the NS has voted to recommend the vice-chair for election to the chair position.
  - Clarifies member terms in light of the RSTC's transition from the prior Committee structure.
  - Clarifies that a change in employment does not automatically require a member's resignation and will be evaluated on a case-by-case basis.
  - Clarifies the process for selection of non-voting members with the assistance of the RSTC secretary in coordination with relevant Governmental Authorities and clarifies the two-year term for non-voting members.
- Section 5 (Officers and Executive Committee):
  - The Chair and Vice -Chair shall evaluate the composition of the Executive Committee within six months of election.
  - The two-year term for serving as Chair and Vice- Chair.

- Section 6 (Subordinate Groups)
  - Clarifies that subordinate groups shall seek officers from NERC membership sectors 1 through 12 to support sufficient expertise and diversity.
  - References the NERC Antitrust Guidelines and Participant Conduct Policy.
  - Fine tunes language associated with review as to whether a Working Group or Task Force should be transitioned to a Subcommittee or Working Group respectively.
- Section 8 (RSTC Deliverables and Approval Processes):
  - Clarifies expectations around RSTC deliverables (including Whitepapers and Standard Authorization Requests) to reflect the expectations posted on the RSTC webpage.

The Charter revisions were approved by the RSTC during the December 2023 meeting. NERC Staff is presenting the Charter to the Corporate Governance and Human Resources to request approval and recommendation to the Board for approval at its February 15, 2024, meeting.

**Attachment 1**

**RSTC Nominating Subcommittee (NS) report to NERC Board**
January 2024 - The following RSTC members have terms expiring January 31, 2024:

Sector members:

- Kayla Mesamore, Sector 1
- Gregory McAuley, Sector 3
- Truong Le, Sector 6
- Venona Greaff, Sector 8
- Eric Miller, Sector 10
- Cezar Panait, Sector 12

At-large members with expiring terms:

- Brett Kruse
- David Grubbs
- Wayne Guttormson
- Dede Sabatki
- David Mulcahy
- Peter Brandien
- Monica Jain, SCE
- Chad Thompson, ERCOT

The RSTC has eight at-large seats to fill. Five of those seats are at-large seats and three of them are converted sector seats. The seats will have a two-year term of 2024-2026.

**Sector 1 –** Kayla Messamore (Evergy) retired from the RSTC. She has a planning background and was the RAS Sponsor. She is replaced by Vinit Gupta (ITC) who has operations and a physical security background.

**Sector 2 –** The seat was converted to an at-large seat in 2022 and was opened for nominations to Sector members in 2024. David Grubbs (Garland), who was an existing RSTC at-large member, was selected as the Sector 2 member.

**Sector 3-** Gregory McAuley (Seminole Electric) has an operations background and he was replaced with Nathan Brown (GSOC) who has a background in operations, planning, and security (cyber and physical).

**Sector 4 –** Robert Reinmuller (HydroOne) was re-elected for this sector.

**Sector 5 –** John Lemire (NCEMC) was re-elected for this sector.

**Sector 6 –** Truong Le (CMS Energy) was replaced by Brett Kruse (Calpine). Truong has operations and physical security expertise. Brett has an operations, planning, and physical security background.

**Sector 7 –** Jodirah Green (ACES) was re-elected for this sector.

**Sector 8 –** No nominations received. This seat was converted to an at-large seat.

**Sector 9 –** No nominations received. This seat was converted to an at-large seat.

**Sector 10 –** The seat was converted to an at-large seat in 2022 and was opened for nominations to Sector members in 2024. Ahmed Maria (IESO) was selected as the Sector 10 member.

**Sector 12 –** No nominations received. This seat was converted to an at-large seat.

**2024-2026 At-large Recommended Slate**
The RSTC NS received and reviewed nineteen nominations for eight open at-large seats. Of the nineteen nominees, eight were current RSTC members seeking an additional two-year term. The RSTC NS deliberated nominations with regard to the following attributes that were included in the at-large nominations period announcement consistent with the Charter:

1. At least one Canadian
2. **Subject Matter Expertise:** Cyber and Physical Security
3. **Interconnection Diversity:** Western Interconnection and Quebec Interconnection
4. **Functional Entity Expertise:** Reliability Coordinator (RC), Purchasing-Selling Entity (PSE), Transmission Service Provider (TSP), Generator Owner (GO), Generator Owner – IBR, Generator Operator – IBR
5. **Sector/Organization Diversity:** Sector 8 (Large end-use electricity customer), Sector 9 (Small end-use electricity customer), and Sector 12 (State Government)

**Wayne Guttormson (Sask Power)** was selected for another two-year term as an at-large RSTC member. Wayne is Canadian and has operations, planning, and physical security expertise. Wayne also has functional entity expertise as a PSE, TSP and GO.

**Venona Greaff (Oxy)** was selected for a two-year term as an at-large RSTC member. Venona served previously as a Sector 8 member and has operations and cyber security expertise. Venona also has functional entity expertise as a PSE and GO.

**Truong Le (Accionia)** was selected for a two-year term as an at-large RSTC member. Truong served previously as a Sector 6 member and has operations and physical security expertise. Truong also has functional entity expertise as a GO.

**Ryan Quint (Elevate Energy Consulting)** was selected for a two-year term as an at-large member. Ryan has expertise in operations, planning, and security and has extensive expertise in Inverter-based Resources (GOP IBR and GO IBR).

**Monica Jain (SCE)** was selected for another two-year term as an at-large RSTC member. Monica has a cyber security background and is from the Western Interconnection. She also has functional entity expertise as a GO.

**Dede Subakti (CAISO)** was selected for another two-year term as an at-large RSTC member. Dede has an operations background and is an RC from the Western Interconnection.

**David Mulcahy (Illuminate Power Analytics, LLC)** was selected for another two-year term as an at-large RSTC member. David has operations and planning expertise.

**Stephen George (ISO New England)** was selected for a two-year term as an at-large member. Stephen has expertise in operations and is an RC.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Reliability and Security Technical Committee Charter

February 2024

Approved by the NERC Board of Trustees: [TBD]

RELIABILITY | RESILIENCE | SECURITY




3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

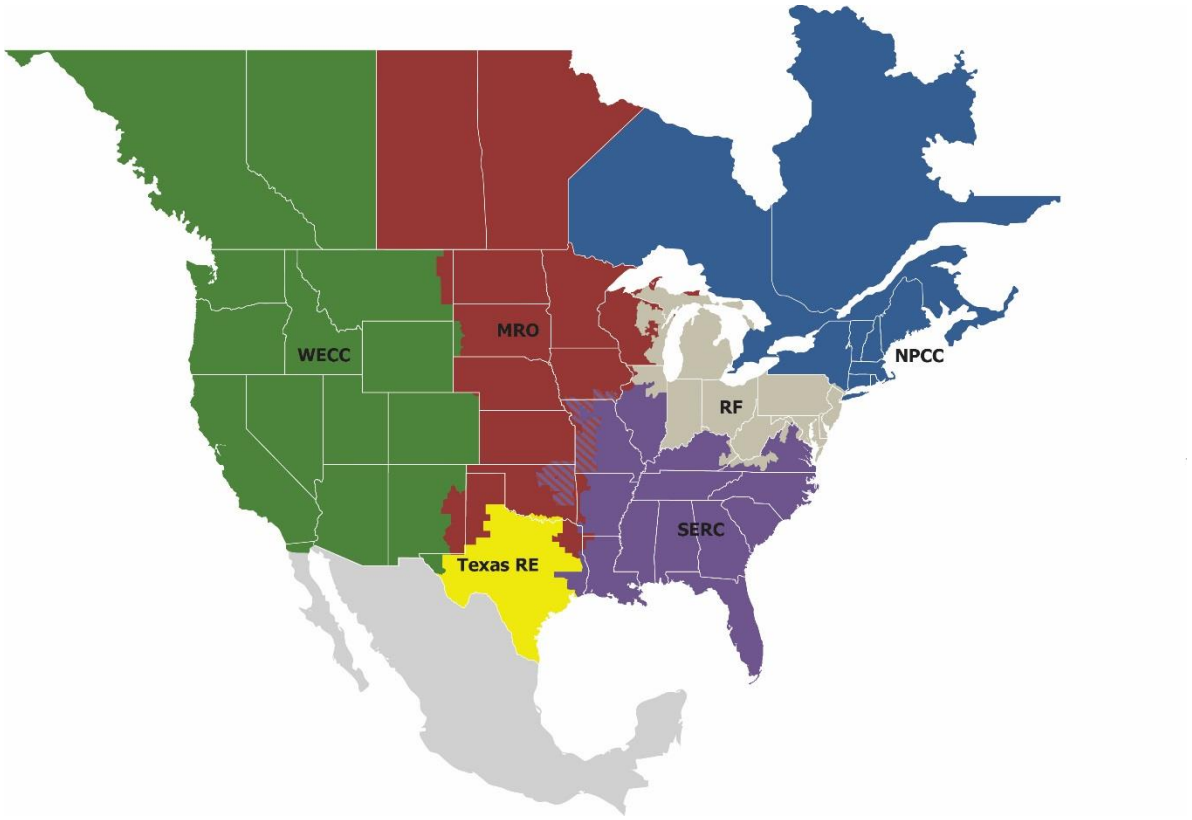
# Table of Contents

# Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six Regional Entities boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ReliabilityFirst |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

# Section 1: Purpose

The Reliability and Security Technical Committee (RSTC) is a standing committee that strives to advance the reliability and security of the interconnected BPS of North America by:

- Creating a forum for aggregating ideas and interests, drawing from diverse industry stakeholder expertise, to support the ERO Enterprise's mission;
- Leveraging such expertise to identify solutions to study, mitigate, and/or eliminate emerging risks to the BPS for the benefit of industry stakeholders, the NERC Board of Trustees (Board) and ERO Enterprise staff and leadership; and,
- Overseeing the implementation of subgroup work plans that drive risk-mitigating technical solutions.

# Section 2: RSTC Functions

**Create a forum for industry stakeholders to support NERC programs in the development of key ERO Enterprise deliverables.**

- Facilitate and advocate information sharing among relevant industry stakeholders;
- Review and provide guidance in developing deliverables critical to ERO functions, such as Reliability Standards, reliability assessments, requests for data (pursuant to Section 1600 of the NERC Rules of Procedure Section (ROP)), Implementation Guidance, and other analyses, guidelines, and reports;
- Solicit and coordinate technical direction, oversight activities, and feedback from industry stakeholders;
- Disseminate ERO deliverables to industry to enhance reliability;
- Develop internal and review external requests for industry actions and informational responses;
- Develop appropriate materials, as directed by ERO functions or the NERC Board, to support ERO Enterprise functions; and,
- Coordinate with ERO staff and liaise with government agencies and trade associations.
- Provide technical input and analyses on operating and planned BPS reliability and security, emerging issues and risks, and other general industry concerns at the request of the NERC Board or NERC staff.

**Develop a two-year Strategic Plan to guide the deliverables of the RSTC and ensure appropriate prioritization of activities.**

- Ensure alignment of the Strategic Plan with NERC priorities, reports and analyses, including the NERC Business Plan and Budget, ERO Enterprise Long-Term Strategy, , biennial Reliability Issues Steering Committee (RISC) ERO Reliability Risk Priorities report, State of Reliability report recommendations, Long-Term, Seasonal and Special Reliability Assessment recommendations and ongoing event analysis trends;
- Coordinate the objectives in the Strategic Plan with the Standing Committees Coordinating Group; and,
- Obtain annual NERC Board approval. The RSTC will target presenting the Strategic Plan to the Board at its February meeting, at the same time that the RSTC presents the full RSTC membership list in accordance with Section III below.

**Coordinate and oversee implementation of RSTC subgroup work plans.**

- Assign an RSTC member sponsor, as necessary, to subgroups to ensure alignment with RSTC schedules, processes, and strategic goals.
- Create and disband subcommittees, working groups and task forces to support ERO Enterprise functions;
- Harmonize and approve the work plans of subcommittees, working groups, and task forces with the Strategic Plan; and,
- Track the progress of the subcommittees, working groups, and task forces to ensure that they complete assigned activities as outlined in their work plans and in alignment with the RSTC Strategic Plan.

**Advise the NERC Board of Trustees.**

- Update the NERC Board semi-annually on progress in executing the Strategic Plan; and,
- Present appropriate deliverables to the NERC Board.

# Section 3: Membership

## Representation Model

The RSTC has a hybrid representation model consisting of the following types of memberships:

- Sector members;
- At-large members; and,
- Non-voting members.

Two members shall be elected to each of the following membership sectors:

- Sector 1 - Investor-owned Utility;
- Sector 2 – State or Municipal Utility;
- Sector 3 - Cooperative Utility;
- Sector 4 - Federal or Provincial Utility/Power Marketing Administration;
- Sector 5 - Transmission-Dependent Utility;
- Sector 6 - Merchant Electricity Generator;
- Sector 7 - Electricity Marketer;
- Sector 8 - Large End Use Electricity Customer;
- Sector 9 - Small End Use Electricity Customer;
- Sector 10 - ISO/RTO; and,
- Sector 12 - Government Representatives.

Selection of at-large members will allow for better balancing of representation on the RSTC of the following:[1]

- Regional Entity and Interconnection diversity (i.e., goal of having at least one representative from each Interconnection and Regional Entity footprint);
- Subject matter expertise (Planning, Operating, or Security);
- Organizational types (Cooperatives, Investor-Owned Utilities, Public Power, Power Marketing Agencies, etc.); and,
- North American countries, consistent with the NERC bylaws (Canada, Mexico, and U.S.) to support diversity of views on issues facing reliability of the North American BPS.

Upon expiration of his or her term as chair, the outgoing chair may remain a non-voting member of the RSTC for one year, in the interest of continuity.[2]

Below is a breakdown of voting and non-voting membership on the RSTC:

[1] *See,* NERC Sector 13 in the NERC Bylaws (2021).

[2] Provided that, if the outgoing chair is elected to represent a voting sector that individual would hold a voting membership position for the relevant term.

| Voting Membership | |
|---|---|
| **Name** | **Voting Members** |
| Sectors 1-10 and 12 | 22 |
| At-Large | 10 |
| Chair and Vice-Chair | 2 |
| **Total** | **34** |

| Non-Voting Membership[3] | |
|---|---|
| **Non-Voting Member** | **Number of Members** |
| NERC Secretary | 1 |
| United States Federal Government | 2 |
| Canadian Federal Government | 1 |
| Provincial Government | 1 |
| Former Chair | 1 |
| **Total** | **6** |

# Member Selection

RSTC members are not required to be from organizations who are NERC members.

Members are appointed to the RSTC upon approval of the NERC Board and serve on the RSTC at the pleasure of the NERC Board.

1. **Affiliates**

   A company, including its affiliates, may not have more than one member on the RSTC. Any RSTC member who is aware of a membership conflict of this nature is obligated to notify the RSTC secretary within 10 business days. The RSTC secretary will in turn report the conflict to the RSTC chair.

   Members impacted by such a conflict, such as through a merger of organizations, must confer among themselves to determine which member should resign from the RSTC and notify the secretary and chair; however, if they cannot reach an amicable solution to determine who will remain, the Nominating Subcommittee will review the qualifications of each member and make a recommendation to the NERC Board for final approval.

2. **Election of Sector Members**

   NERC members in each sector will annually elect members for expiring terms or open seats using a nomination and election process that is open, inclusive, and fair. If a sector has no nominations for one or both sector seats at the annual election, the RSTC will convert those empty sector seats to at-large seats until the end of the term.

   Sector elections will be completed in time for the Nominating Subcommittee to identify and nominate at-large representatives as well as for the secretary to send the full RSTC membership list to the NERC Board for approval at its annual February meeting.

   If an interim vacancy is created in a sector, a special election will be held unless it coincides with the annual election process. If a sector cannot fill an interim vacancy, then that sector seat will remain vacant until the next annual election. Interim sector vacancies will not be filled with an at-large representative.

[3] Upon recognition of NERC as the ERO, Mexican Government representation will be equitable and based approximately on proportionate Net Energy for Load.

3. **Nominating Subcommittee**

   The Nominating Subcommittee (RSTC NS) will consist of seven (7) members (the RSTC vice-chair and six (6) members drawing from different sectors and at-large representatives). Apart from the vice-chair, members of the RSTC Executive Committee (RSTC EC) shall not serve on the RSTC NS.

   The NS members are nominated by the RSTC chair and voted on by the full RSTC membership.

   The term for members of the NS is one (1) year.

   The RSTC NS is responsible for (a) recommending individuals for at-large representative seats, and, (b) managing the process to select the chair and/or vice-chair of the RSTC. The RSTC vice-chair shall recuse him or herself from this process (a) unless he or she is not seeking re-election, or (b) until the RSTC NS has concluded a vote to recommend the vice-chair for subsequent RSTC election to the chair position. At-large members on the RSTC NS shall recuse themselves from recommendations for at-large representative seats if they are seeking reappointment.

4. **Selection of At-Large Members**

   The RSTC NS solicits and reviews nominations from the full RSTC and industry to fill at-large representative seats. After reaching consensus, the RSTC NS submits a recommended slate of at-large candidates to the Board at its annual February meeting for approval. To the extent practicable, the RSTC NS will balance the following criteria to select at-large members: (a) geographic diversity from all Interconnections and ERO Enterprise Regional Entities; (b) high-level understanding and perspective on reliability risks based on experience at an organization in a sector; and, (c) experience and expertise from an organization in the sector relevant to the RSTC.

   The Board votes to appoint the at-large members.

5. **Non-Voting Members**

   Non-voting members shall serve a term of two (2) years, just as voting members. At the start of the annual RSTC nomination process the RSTC secretary will coordinate with entities entitled to non-voting membership to identify representatives for any open non-voting seats. The RSTC secretary shall do this by reaching out to the relevant Governmental Authorities to solicit interest for non-voting member seats and forwarding those names to the RSTC NS for inclusion in the slate of candidates presented to the Board at its annual February meeting. Where more than one candidate is proposed, the RSTC secretary will work with the relevant Governmental Authorities to reach a decision.

6. **International Representation**

   International representation on the RSTC shall be consistent with Article VIII Section 4 of the NERC Bylaws.

# Member Expectations

RSTC members and the RSTC's subordinate groups are expected to act in accordance with this charter, as well as to accomplish the following:

- Adhere to NERC Antitrust Guidelines[4] and Participant Conduct Policy[5];
- Demonstrate and provide knowledge and expertise in support of RSTC activities;
- Where applicable, solicit comments and opinions from constituents and groups of constituents or trade organizations represented by the member and convey them to the RSTC;

[4] https://www.nerc.com/pa/Stand/Resources/Documents/NERC_Antitrust_Compliances_Guidelines.pdf
[5] https://www.nerc.com/gov/Annual%20Reports/NERC_Participant_Conduct_Policy.pdf

- Respond promptly to all RSTC requests, including requests for reviews, comments, and votes on issues before the RSTC; and,
- During meetings, comply with the procedures outlined for that meeting and identified in this Charter. .

## Sponsor Expectations

Sponsors are expected to act in accordance with this charter, as well as to accomplish the following:

- Understand and advance the expectations of the RSTC, not those of their sector or other interest group;
- Assure that recommendations and action plans are designed for implementation;
- Support the subgroup Chair and Vice-Chair in seeing the big picture without directing the activities of the subgroup; and,
- Liaise with the RSTC.

## Member Term

Members shall serve a term of two years.

An RSTC member may serve a term shorter than two (2) years if:

- Two (2) members are simultaneously selected to a sector that did not have any existing members, in order to stagger their terms, one member will be assigned a one-year term and the second member will be assigned a two-year term.
- A member is selected to fill a vacant member seat between elections, the term will end when the term for that vacant seat ends.

There are no limits on the number of terms that members can serve.

## Vacancies and Proxies

Membership vacancies may be filled between annual elections using the aforementioned selection process.

1. **Vacancies Created by the Member**

   In the event a member can no longer serve on the RSTC, that member will submit a written resignation to the RSTC chair or the secretary. A change in employment does not automatically require a member's resignation and will be evaluated on a case-by-case basis.

2. **Vacancies Requested by the Chair**

   The chair may request any RSTC member who ceases to participate in the RSTC consistent with member expectations (above) and to the satisfaction of the chair, to submit a resignation or to request continuation of membership with an explanation of extenuating circumstances. If a written response is not received within 30 days of the chair's request, the lack of response will be considered a resignation. If the chair is not satisfied with a written response, the RSTC chair will refer the matter to the NERC Board.

3. **Vacancies Requested by the Board**

   RSTC members serve at the pleasure of the NERC Board. The NERC Board may initiate a request for resignation, removal, or replacement of a member from the RSTC, as it deems appropriate or at the request of the RSTC chair.

### 4. Proxies

A voting member may select a proxy who attends and votes during all or a portion of a committee meeting in lieu of a voting member, provided that the absent voting representatives notifies the RSTC chair, vice chair, or secretary of the proxy. A proxy may not be given to another RSTC member. A proxy must meet the RSTC's membership eligibility requirements, including affiliate restrictions.

To permit time to determine a proxy's eligibility, all proxies must be submitted to the secretary in writing at least one week prior to the meeting (electronic transmittal is acceptable) for approval by the chair. Any proxy submitted after that time will be accepted at the chair's discretion.

# Section 4: Meetings

Open meetings will be conducted in accordance with this Charter. The Chair may consult Robert's Rules of Order for additional guidance.

## Quorum

The quorum necessary for transacting business at meetings of the RSTC is two-thirds of the voting members currently on the RSTC's roster and is determined once at each meeting.

If a quorum is not determined, the RSTC may not take any actions requiring a vote; however, the chair may allow discussion of the agenda items.

## Voting

Actions by the RSTC will be approved upon receipt of the affirmative vote of two-thirds of the votes cast at any meeting at which a quorum is present. An abstention ("present" vote) does not count as a vote cast.

Voting may take place during regularly scheduled in-person meetings, via electronic mail, or via conference call/virtual meeting.

Refer to Section 7 for voting procedures.

## Executive, Open and Closed Sessions

The RSTC and its subordinate groups hold meetings open to the public, except as noted herein. Although meetings are open, only voting members may offer and act on motions.

All meetings of the Executive Committee and the RSTC NS shall be conducted in closed session.

The chair may also hold closed sessions in advance of the open meeting with limited attendance based on the confidentiality of the information to be disclosed at the meeting. Such limitations should be applied sparingly and on a non-discriminatory basis. Any discussion of confidential information in a closed session shall be consistent with Section 1500 of the NERC ROP. [6]

## Majority and Minority Views

All members of a committee will be given the opportunity to provide alternative views on an issue. The results of committee actions, including recorded minutes, will reflect the majority as well as any minority views of the committee members.

## Action without a Meeting

Any action required or permitted at a meeting of the committee may be taken without a meeting at the request of the chair.

Such action without a meeting will be performed by electronic ballot (e.g., telephone, email, or Internet survey) and considered a roll call ballot. The secretary will announce the action required at least five business days before the date on which voting commences. As time permits, members should be allowed a window of ten (10) business days to vote. The secretary will document the results of such an action within ten (10) business days of the close of the voting period. Such action must meet the regular meeting quorum and voting requirements above.

[6] Section 1500 of the NERC ROP - https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC%20ROP%20(With%20Appendicies).pdf

# Section 5: Officers and Executive Committee

## Officers

The RSTC will have two officers – one chair and one vice-chair.

Officers shall be selected as follows:

- The RSTC NS solicits nominations for chair and vice-chair through an open nomination process. Self-nominations are permitted during the open nomination period.
- At the close of the nomination period, the RSTC NS will propose a chair and a vice-chair candidate. The full RSTC will elect the chair and vice chair.
- The chair and vice chair must be a committee member and shall not be from the same sector.
- The elected chair and vice-chair are appointed by the NERC Board.
- No individual may serve more than one term as vice chair and one term as chair unless an exception is approved by the Board. A term lasts two years.

Upon expiration of his or her term as chair, the outgoing chair may remain a non-voting member of the RSTC for one year, in the interest of continuity.[7]

## Secretary

NERC will appoint the RSTC secretary.

A member of the NERC staff will serve as the secretary of the RSTC. The secretary will do the following:

- Manage the day-to-day operations and business of the RSTC;
- Prepare and distribute notices of the RSTC meetings, prepare the meeting agenda, and prepare and distribute the minutes of the RSTC meetings;
- Facilitate the election/selection process for RSTC members; and,
- Act as the RSTC's parliamentarian.

## Chair

The chair will direct and provide general supervision of RSTC activities, including the following:

- Coordinate the scheduling of all meetings, including approval of meeting duration and location;
- Develop agendas and rule on any deviation, addition, or deletion from a published agenda;
- Preside at and manage meetings, including the nature and length of discussion, recognition of speakers and proxies, motions, and voting;
- Act as spokesperson for the RSTC at forums inside and outside of NERC; and,
- Attend meetings of the NERC Board when necessary to report on RSTC activities.

## Vice Chair

The vice chair will assume the responsibilities of the chair under the following conditions:

[7] Provided that, if the outgoing chair is elected to represent a voting sector that individual would hold a voting membership position for the relevant term

- At the discretion of the chair (for brief periods of time);
- When the chair is absent or temporarily unable to perform the chair's duties; or,
- When the chair is permanently unavailable or unable to perform the chair's duties. In the case of a permanent change, the vice chair will continue to serve until a new chair is nominated and appointed by the NERC Board.

## Executive Committee

The RSTC EC shall consist of six (6) members:

- Chair;
- Vice-chair;
- Four (4) RSTC voting members selected by the RSTC chair and vice-chair with a reasonable balance of subject matter expertise in Operations, Planning, and/or Security and with consideration for diversity in representation (i.e., sectors, Regional Entities, Interconnections, etc.).
    - The RSTC chair and vice-chair shall evaluate composition of the RSTC EC within six months of their election as officers for the appropriate balance of technical expertise, geographical representation, and tenure.

The RSTC EC of the RSTC is authorized by the RSTC to act on its behalf between regular meetings on matters where urgent actions are crucial and full RSTC discussions are not practical. The RSTC shall be notified of such urgent actions taken by the RSTC EC within a week of such actions. These actions shall also be included in the minutes of the next open meeting.

Ultimate RSTC responsibility resides with its full membership whose decisions cannot be overturned by the EC. The RSTC retains the authority to ratify, modify, or annul RSTC EC actions.

After general solicitation from RSTC membership, the RSTC EC will appoint any sponsors of subgroups.

# Section 6: RSTC Subordinate Groups

The RSTC organizational structure will be aligned as described by the NERC Bylaws to support a superior-subordinate hierarchy.

The RSTC may establish subcommittees, working groups, and task forces as necessary. The RSTC will be the responsible sponsor of all subordinate subcommittees, working groups, or task forces that it creates, or that its subordinate subcommittees and working groups may establish.

Officers of subordinate groups will be appointed by the chair of the RSTC. Where feasible, officers shall be selected from individuals employed at entities within NERC membership sectors 1 through 12 to support sufficient expertise and diversity in execution of the subordinate group's responsibilities.

Subcommittees, working groups, and taskforces will conduct business in a manner consistent with all applicable sections of this Charter, including the NERC Antitrust Guidelines[8] and Participant Conduct Policy[9].

## Subcommittees

The RSTC may establish subcommittees to which the RSTC may delegate some of RSTC's functions. The RSTC will approve the scope of each subcommittee it forms. The RSTC chair will appoint the subcommittee officers (typically a chair and a vice chair) for a specific term (generally two years). The subcommittee officers may be reappointed for up to two additional terms. The subcommittee will work within its assigned scope and be accountable for the responsibilities assigned to it by the committee. The formation of a subcommittee, due to the permanency of the subcommittee, will be approved by the NERC Board.

## Working Groups

The RSTC may delegate specific continuing functions to a working group. The RSTC will approve the scope of each working group that it forms. The RSTC chair will appoint the working group officers (typically a chair and a vice chair) for a specific term (generally two (2) years). The working group officers may be reappointed for one (1) additional term. The RSTC will conduct a "sunset" review of each working group every year. The working group will be accountable for the responsibilities assigned to it by the RSTC or subcommittee and will, at all times, work within its assigned scope. The RSTC should consider transitioning to a subcommittee any working group that is required to work longer than two terms.

## Task Forces

The RSTC may assign specific work to a task force. The RSTC will approve the scope of each task force it forms. The RSTC chair will appoint the task force officers (typically a chair and a vice chair). Each task force will have a finite duration, normally less than one year. The RSTC will review the task force scope at the end of the expected duration and review the task force's execution of its work plan at each subsequent meeting of the RSTC until the task force is retired. Action of the RSTC is required to continue the task force past its defined duration. The RSTC should consider transitioning to a working group any task force that is required to work longer than two years.

[8] https://www.nerc.com/pa/Stand/Resources/Documents/NERC_Antitrust_Compliances_Guidelines.pdf
[9] https://www.nerc.com/gov/Annual%20Reports/NERC_Participant_Conduct_Policy.pdf

# Section 7: Meeting Procedures

## Voting Procedures for Motions

**In-Person**

- The default procedure is a voice vote.
- If the chair believes the voice vote is not conclusive, the chair may call for a show of hands.
- The chair will not specifically ask those who are abstaining to identify themselves when voting by voice or a show of hands. If the chair desires a roll call, the secretary will call each member's name.

  Members answer "yes," "no," or "present" if they wish to abstain from voting. As provided above, an abstention does not count as a vote cast.

**Conference Call / Virtual[10]**

- All voting shall default to being conducted through use of a poll.
- Where a need to record each member's vote is requested or identified, the RSTC may conduct voting via a roll call vote.

## Minutes

- Meeting minutes are a record of what the committee did, not what its members said.
- Minutes should list discussion points where appropriate but should usually not attribute comments to individuals. It is acceptable to cite the chair's directions, summaries, and assignments.
- All Committee members are afforded the opportunity to provide alternative views on an issue. The meeting minutes will provide an exhibit to record minority positions.

[10] Virtual meetings include those where virtual attendance is possible, such as a fully or partially virtual meeting.

# Section 8: RSTC Deliverables and Approval Processes

The RSTC will abide by the following to approve, endorse, or accept committee deliverables.

## Reliability Guidelines, Security Guidelines and Technical Reference Documents

Reliability Guidelines, Security Guidelines, and Technical Reference Documents suggest approaches or behavior in a given technical area for the purpose of improving reliability.

## Reliability and Security Guidelines

Reliability Guidelines and Security Guidelines are not binding norms or mandatory requirements. Reliability Guidelines and Security Guidelines may be adopted by a responsible entity in accordance with its own facts and circumstances.

1. **New/updated draft Guideline approved for industry posting.**

   The RSTC accepts for posting for industry comment (i) the release of a new or updated draft Guideline developed by one of its subgroups or the committee as a whole; or (ii) the retirement of an existing Guideline.

   The draft Guideline or retirement is posted as "for industry-wide comment" for 45 days. If the draft Guideline is an update, a redline version against the previous version must also be posted.

   After the public comment period, the RSTC will post the comments received as well as its responses to the comments. The RSTC may delegate the preparation of responses to a committee subgroup.

   A new or updated Guideline which considers the comments received, is approved by the RSTC and posted as "Approved" on the NERC website. Updates must include a revision history and a redline version against the previous version.

   After posting a new or updated Guideline, the RSTC will continue to accept comments from the industry via a web-based forum where commenters may post their comments.

   a. Each quarter, the RSTC will review the comments received.

   b. At any time, the RSTC may decide to update the Guideline based on the comments received or on changes in the industry that necessitate an update.

   c. Updating an existing Guideline will require that a draft updated Guideline be posted and approved by the RSTC in the above steps.

2. **Review of Approved Reliability Guidelines, Security Guidelines and Technical Reference Documents**

   Approved Reliability Guidelines or Technical Reference Document shall be reviewed for continued applicability by the RSTC at a minimum of every third year since the last revision.

3. **Communication of New/Revised Reliability Guidelines, Security Guidelines and Technical Reference Documents**

   In an effort to ensure that industry remains informed of revisions to a Reliability Guideline or Technical Reference Document or the creation of a new Reliability Guideline or Technical Reference Document, the RSTC subcommittee responsible for the Reliability Guideline will follow an agreed upon process. Reliability Guidelines, Security Guidelines, and Technical Reference Documents (including white papers as discussed below) shall be posted on the RSTC website.

4. **Coordination with Standards Committee**

Standards Committee authorization is required for a Reliability Guideline or Security Guidelines to become a supporting document that is posted with or referenced from a NERC Reliability Standard. See Appendix 3A in the NERC's ROP under "Supporting Document."

## Section 1600 Data or Information Requests[11]

A report requested by the RSTC that accompanies or recommends a Rules of Procedure (ROP) Section 1600 - Data or Information Request will follow the process outlined below:

1. This Section 1600 request, with draft supporting documentation, will be provided to the RSTC at a regular meeting.
2. The draft Section 1600 data request and supporting documentation will be considered for authorization to post for comments at the RSTC regular meeting.
3. A committee subgroup will review and develop responses to comments on the draft Section 1600 data request and will provide a final draft report, including all required documentation for the final data request, to the RSTC at a regular meeting for endorsement.
4. The final draft of the 1600 data request – with responses to all comments and any modifications made to the request based on these comments – will be provided to the NERC Board.

## Other Types of Deliverables

1. **Policy Outreach**

   On an ongoing basis, the RSTC will coordinate with the forums, policymakers, and other entities to encourage those organizations to share Reliability Guidelines, technical reference documents and lessons learned to benefit the industry.

   Reports required under the NERC ROP or as directed by an Applicable Governmental Authority or the NERC Board: documents include NERC's long-term reliability assessment, special assessments, and probabilistic assessments. These reports may also be used as the technical basis for standards actions and can be part of informational filings to FERC or other government agencies.

2. **White Papers**

   Documents that explore technical facets of topics, making recommendations for further action. They may be written by subcommittees, working groups, or task forces of their own volition, or at the request of the RSTC. Where feasible, a white paper recommending potential development of a standard authorization request (SAR) shall be posted for comment on the RSTC website. White papers will be posted on the RSTC webpage, after RSTC approval.

3. **Technical Reference Documents and Technical Reports**

   Documents that serve as a reference for the electric utility industry and/or NERC stakeholders regarding a specific topic of interest. These deliverables are intended to document industry practices or technical concepts at the time of publication and may be updated as deemed necessary, per a recommendation by the RSTC or its subgroups to reflect current industry practices. Technical reference documents and reports will be posted on the RSTC webpage, after RSTC approval.

[11] Section 1600 of the NERC ROP - https://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC%20ROP%20(With%20Appendicies).pdf. This process only applies to Section 1600 requests developed by the RSTC and its subordinate groups.

4. **Implementation Guidance**

   Documents providing examples or approaches for registered entities to comply with standard requirements. The RSTC is designated by the ERO Enterprise as a pre-qualified organization for vetting Implementation Guidance in accordance with NERC Board -approved Compliance Guidance Policy. Implementation Guidance that is endorsed by the RSTC can be submitted to the ERO Enterprise for endorsement, allowing for its use in Compliance Monitoring and Enforcement Program (CMEP) activities.

5. **Standard Authorization Requests (SAR)**

   A form used to document the scope and reliability benefit of a proposed project for one or more new or modified Reliability Standards or definitions or the benefit of retiring one or more approved Reliability Standards.

   Any entity or individual, including NERC Committees or subgroups and NERC Staff, may propose the development of a new or modified Reliability Standard. A SAR prepared by a subordinate group of the RSTC must be endorsed by the RSTC prior to presentation to the Standards Committee. Each SAR should be accompanied by a technical justification that includes, at a minimum, a discussion of the reliability-related benefits and costs of developing the new Reliability Standard or definition, and a technical foundation document (e.g., research paper) to guide the development of the Reliability Standard or definition. The technical foundation document should address the engineering, planning and operational basis for the proposed Reliability Standard or definition, as well as any alternative approaches considered to SAR development.

   RSTC endorsement of a SAR supports: (a) initial vetting of the technical material prior to the formal Standards Development Process, and, (b) that sound technical justification has been developed, and the SAR will not be remanded back to the RSTC to provide such justification per the Standard Processes Manual.

## Review Process for other Deliverables

Deliverables with a deadline established by NERC management or the NERC Board will be developed based on a timeline reviewed by the RSTC to allow for an adequate review period, without compromising the desired report release dates. Due to the need for flexibility in the review and approval process, timelines are provided as guidelines to be followed by the committee and its subgroups.

A default review period of no less than 10 business days will be provided for all committee deliverables. Requests for exceptions may be brought to the RSTC at its regular meetings or to the RSTC EC if the exception cannot wait for an RSTC meeting.

In all cases, a final report may be considered for approval, endorsement, or acceptance if the RSTC, as outlined above, decides to act sooner.

## Actions for Deliverables

1. **Approve:**

   The RSTC has reviewed the deliverable and supports the content and development process, including any recommendations.

2. **Accept:**

   The RSTC has reviewed the deliverable and supports the development process used to complete the deliverable.

3. **Remand:**

   The RSTC remands the deliverable to the originating subcommittee, refer it to another group, or direct other action by the RSTC or one of its subcommittees or groups.

4. **Endorse:**

   The RSTC agrees with the content of the document or action and recommends the deliverable for the approving authority to act on. This includes deliverables that are provided to the RSTC by other NERC committees. RSTC endorsements will be made with recognition that the deliverable is subject to further modifications by NERC Executive Management and/or the NERC Board. Changes made to the deliverable subsequent to RSTC endorsement will be presented to the RSTC in a timely manner. If the RSTC does not agree with the deliverable or its recommendations, it may decline endorsement. It is recognized that this does not prevent an approval authority from further action.

# Reliability Issues Steering Committee Membership

## Action
Approve

## Background
As required by the Reliability Issues Steering Committee (RISC) charter, the RISC Nominating Committee (RISCNC) chaired by the Member Representatives Committee (MRC) vice chair and including the Board vice chair, the NERC President and CEO, and the Committee chair and vice chair solicited a pool of candidates to fill open stakeholder-based positions (At-Large and MRC) on the RISC. The RISC nomination period was held November 27-December 29, 2023. The RISC Roster requires:

1. At least six (6) stakeholder-based— four (4) from the MRC and at least two (2) At-Large members (not members of the MRC);
2. Three (3) committee-based—one (1) from each of the standing committees: Standards (SC), Reliability and Security Technical Committee and Compliance and Certification (CCC). The Board will be responsible for appointing the committee-based members to the RISC. These members will be the chair or vice chair unless otherwise recommended by the standing committee and be subject to NERC Board approval.

## Summary
The RISCNC met on February 2, 2024 to review the slate of nominees and recommends that the Board of Trustees approve the appointment of the following representatives for the terms listed. The slate recommended fulfills gaps in skillsets and expertise lost by terming members, as well as fulfills gaps of expertise in areas of emerging risks identified in the 2023 ERO Reliability Risk Priorities Report (ex., Energy Policy).

| Member Type/Term | Name/Organization |
|---|---|
| Proposed Chair<br>Term expiring January 31, 2026 | Teresa Mogensen<br>ATC |
| At-Large Member<br>Term expiring January 31, 2025 | Bill Zuretti<br>EPSA |
| At-Large Member<br>Term expiring January 31, 2026 | Woody Rickerson<br>ERCOT |
| At-Large Member<br>Term expiring January 31, 2026 | Jennifer Sterling<br>Exelon |
| At-Large Member<br>Term expiring January 31, 2026 | Sean Gallagher<br>SEIA |
| At-Large Member<br>Term expiring January 31, 2026 | Dennis McDermitt<br>National Grid |
| At-Large Member<br>Term expiring January 31, 2026 | Jim Jones<br>Great River Energy |
| At-Large Member<br>Term expiring January 31, 2026 | Walter Alvarado<br>Consolidated Edison |

| | |
|---|---|
| At-Large Member<br>Term expiring January 31, 2026 | Mark Ahlstrom<br>Nextera Analytics |
| At-Large Member<br>Term expiring January 31, 2026 | David Heitzer<br>BP Energy Retail |
| At-Large Member<br>Term expiring January 31, 2025 | Brian Slocum, Past Chair<br>ITC Holdings |
| MRC Member<br>Term expiring January 31, 2026 | Jennifer Flandermeyer<br>Nextera |
| MRC Member<br>Term expiring January 31, 2026 | Matthew Fischesser<br>ACES |
| MRC Member<br>Term expiring January 31, 2026 | Darryl Maxwell<br>Manitoba Hydro |
| MRC Member<br>Term expiring January 31, 2026 | Edison Elizeh<br>BPA |
| Compliance & Certification Committee<br>Term expiring January 31, 2025 | Silvia Parada-Mitchell<br>NextEra Energy |
| Reliability and Security Technical Committee<br>Term expiring January 31, 2025 | John Stephens<br>City Utilities of Springfield |
| Standards Committee<br>Term expiring January 31, 2025 | Todd Bennett<br>Associated Electric Cooperative, Inc |

# Standards Committee Proposed Charter Amendments

## Action
Approve

## Background
At its December 13, 2023 meeting, the Standards Committee (SC) endorsed revisions to the SC Charter, which was last approved by the Board on February 10, 2022.

## Summary
The revised SC Charter focuses on allowing expanded use of the Standards Committee Executive Committee (SCEC) to keep projects advancing by taking action via an open and transparent process between scheduled meetings of the full SC.

The proposed SC Charter revisions include the following:

- Expanding the authority of the SCEC to authorize administrative actions (e.g., posting for supplemental drafting team nomination periods and posting for supplemental Standard Authorization Requests (SARs) for projects in active development);
- Expanding the authority of the SCEC to approve procedural actions relating to supplemental or revised SARs postings during the standard drafting phase, as well as the authority to allow shortened informal comment periods for such SARs;
- Clarifying that the Chair and Vice Chair are voting members of the SCEC;
- Allowing for the election of up to seven members to the SCEC; and
- Clarifying that all actions of the SCEC must be open to the public, documented in meeting minutes, and reported to the full SC at its next regularly scheduled meeting.

The proposed SC Charter revisions address Recommendation five of the Standards Process Stakeholder Engagement Group in part to improve how the SC facilitates the efficient administration of the standards process.[1] As such, NERC staff supports the proposed changes.

[1] Memo to NERC Board of Trustees from the Standards Process Stakeholder Engagement Group, *Recommended Enhancements to the NERC Reliability Standards Development Process and Considerations for Future Work* (Oct. 10, 2022), available here: Recommendations of the SPSEG for Board of Trustees (nerc.com).

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Standards Committee Charter

## Approved by the Standards Committee

TBD

**RELIABILITY | RESILIENCE | SECURITY**




**3353 Peachtree Road NE**
**Suite 600, North Tower**
**Atlanta, GA 30326**
**404-446-2560 | www.nerc.com**

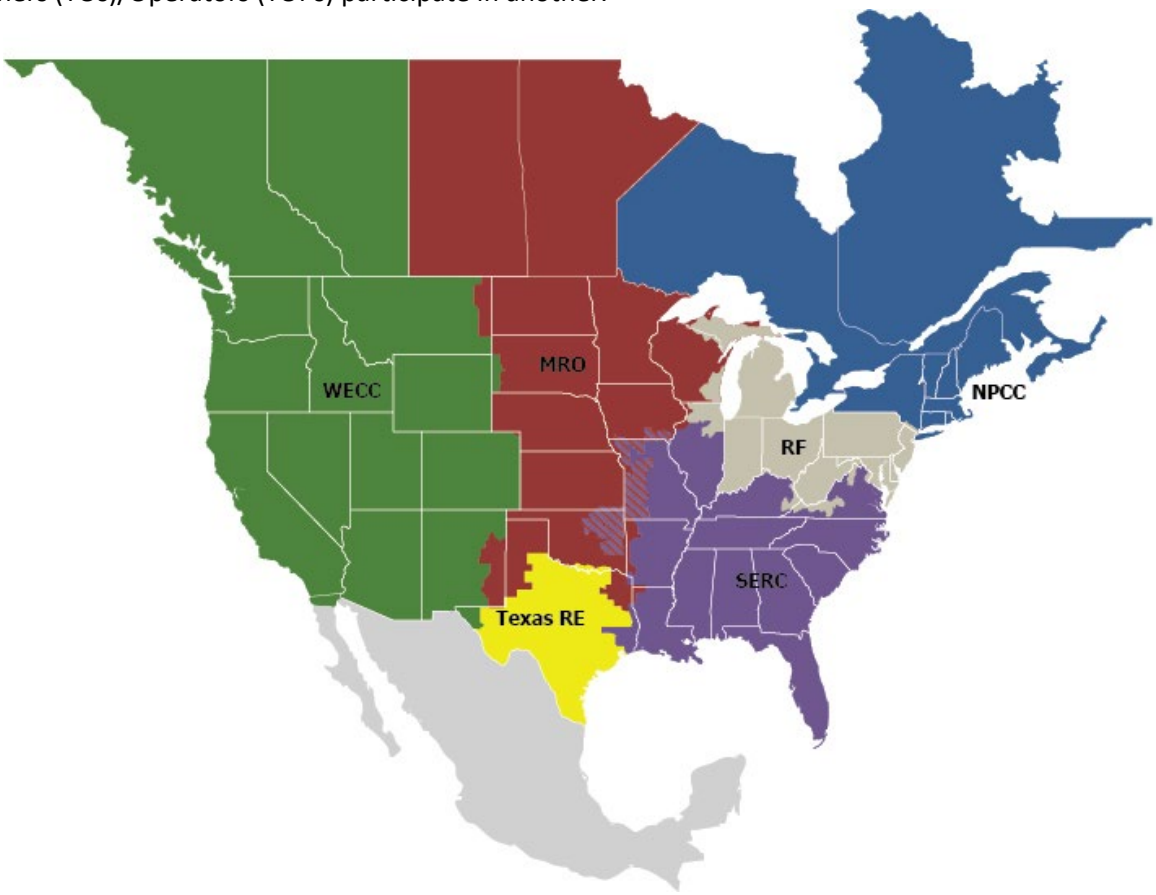
# Table of Contents

# Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ReliabilityFirst |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | Western Electricity Coordinating Council |

# Chapter 1: Purpose

The Standards Committee (the Committee) of the North American Electric Reliability Corporation (NERC), working with NERC Standards Staff, manages and executes the Reliability Standards development process to timely develop and maintain a comprehensive set of results-based Reliability Standards.

Section 306 of the Rules of Procedure establish that "The Standards Committee shall provide oversight of the Reliability Standards development process to ensure stakeholder interests are fairly represented. The Standards Committee shall not under any circumstance change the substance of a draft or approved Reliability Standard."

The Committee is responsible for ensuring that the Reliability Standards, definitions, Variances and Interpretations developed by drafting teams are developed in accordance with the processes in the Standard Processes Manual, Appendix 3A of the NERC Rules of Procedure to support NERC's benchmarks for Reliability Standards as well as criteria for governmental approval.

The Standards Committee, as a process oversight committee, does not base its process decisions on the technical content of Reliability Standards or Standards Authorization Requests.

# Chapter 2: Reporting

The Committee reports and is accountable to the NERC Board of Trustees. The Committee members have the responsibility to keep the industry segments they represent informed regarding Reliability Standards matters. The NERC Board of Trustees shall approve amendments to this Charter pursuant to Section 1300 of the NERC Rules of Procedure.

# Chapter 3: Overview and Functions

The Committee manages the NERC process to develop and maintain a comprehensive set of results-based Reliability Standards. Specifically, working together with NERC Standards Staff, the Committee has the following duties:

- Develop a long-term (multi-year) strategic vision describing the goals and direction for Reliability Standards development consistent with NERC's strategic and business plans.
- Coordinate with the Reliability Issues Steering Committee (RISC) to develop a Reliability Standards Development Plan (RSDP) prioritizing and aggressively pursuing work related to the purpose of the Committee.
- Assist to develop the RSDP, inclusive of preparing the initial posting for stakeholder comment.
- Establish and facilitate informal and formal collaborative, consensus building processes with stakeholder groups and NERC committees.
- Establish quality assurance and quality control processes to develop or modify Reliability Standards and applicable associated documents to align with the criteria established in the Standards Process Manual.
- Appoint, monitor and direct teams for work related to the Standards Process Manual (inclusive of, but not limited to, standard drafting teams) generally consisting of subject matter experts, a facilitator, a technical writer and compliance, legal and regulatory experts suitably equipped to address the desired reliability objectives.
- Receive and respond to decisions of appeals panels in accordance with the Reliability Standards process.
- Develop, maintain and implement a Standard Processes Manual ensuring the integrity of Reliability Standards development in a fair, balanced, open, and inclusive manner.
- Facilitate communication with regard to NERC Standards department and Standards Committee work, such as Reliability Standards under development and Standards Committee guiding documents.
- May consult with another NERC Committee for input to technical justification or alternate approaches to issues raised in a SAR.

# Chapter 4: Membership

## Segment Representation

The Committee membership consists of two members elected from each industry segment in accordance with Appendix 3B (*Procedures for Election of Members of the Standards Committee*) to the NERC Rules of Procedure. Each industry segment may establish its own rules for electing and replacing its SC representatives consistent with the following requirements:

## Membership Requirements

No two persons employed by the same corporation or organization or an affiliate may serve concurrently as Committee members.

- Any Committee member with such a membership conflict shall notify the Committee secretary who will inform the Committee chair.
- Members impacted by a conflict, such as through a merger of organizations, may confer between themselves to determine which member should resign from the Committee and notify the Committee secretary and chair. If the impacted members do not resolve the conflict in a timely manner, the Committee chair shall notify all members of the affected industry segments of the need to resolve the conflict. If the membership conflict remains unresolved, the Committee chair shall take the conflict to the NERC Board of Trustees for resolution.
- Any Committee member aware of an unresolved membership issue shall notify the Committee chair.

## Resignation from the Committee

Any member of the Committee who resigns from the Committee shall submit a written resignation to the Committee secretary and Committee chair.

- The Committee secretary shall facilitate election of a replacement member from the applicable industry segment to serve the remainder of the resigned member's term.
- If any member of the Committee fails to attend or send a proxy for more than two consecutive regularly scheduled meetings or conference calls, or more than two e-mail ballots between regularly-scheduled meetings, the Committee chair shall send a written notice to that member requesting the member either: (i) resign; or (ii) provide an explanation of the member's absences. If the member does not provide a written response within 30 calendar days of the date of the written notice, lack of response shall be deemed a resignation

## Committee Member Change of Employment

- Any Committee member who leaves one organization and is subsequently employed by another organization in the same industry segment may retain the membership position.
- If a Committee member changes employment to an organization in a different industry segment, that Committee member shall resign from the Committee no later than the date of the employment change. The resignation letter shall be addressed to the Committee chair who will provide the letter to the Committee secretary and request an election to fill the vacant position. In the absence of a formal resignation, the Committee member will be deemed to have resigned as of the date the Committee chair or secretary becomes aware of the employment change.

## Membership Terms

Committee members shall serve a term of two years without limitation to the number of terms the members may

serve, with members' terms staggered so half of the members (one per segment) is elected each year by industry segment election. Membership terms start on January 1 of each year.

## Vacancies Caused by Election of Officers

The vacancies in the industry segments and/or Canada representation created by selection of the chair and vice chair shall be filled at the next annual election of Committee representatives. When a representative is elected to serve as the chair or vice chair during the second year of a two year term, the representative elected to fill the vacancy shall serve a one year term.

## NERC Director of Standards or Designee

Acts as a non-voting Committee member to represent NERC's position on agenda items with the assistance of NERC Standards Staff.

# Chapter 5: Officers

## Selection

Prior to the annual election of Committee representatives in odd numbered years, the Committee members shall select a chair and vice chair from among their membership by majority vote. The chair and vice chair cannot represent the same industry segment. Approximately 150 calendar days prior to the end of each term, a nominating committee shall solicit nominations for chair and vice chair. The nominating committee shall consult with the NERC Board of Trustees' SC liaison on the nominations received.

No less than ten calendar days before the election date, the nominating committee shall provide to the Committee members the qualifications of the chair and vice chair nominees. At the time of the election, the Committee can accept nominations from the floor. Following the election, the successful candidates shall be presented to the NERC Board of Trustees for approval. The chair and vice chair, upon assuming such positions, shall cease to act as representatives of the industry segments that elected them and thereafter be responsible for acting in the best interests of the Committee as a whole.

## Terms

The term of office for the Committee chair and vice chair is two years without limit on the number of terms an officer may serve. A member of NERC staff serves as the Committee's non-voting secretary.

## Voting

The Committee chair and vice chair are non-voting Committee members.

## Duties of the Chair

In addition to the duties, rights and privileges discussed elsewhere in this document, the Committee chair:

- Presides over and provides general supervision of Committee and Executive Committee activities and meetings.
- Presides over all Committee meetings, including the nature and length of discussion, recognition of speakers, motions and voting.
- In concert with NERC Staff, schedules Committee meetings.
- Reviews all substitute or proxy representatives.
- Acts as Committee spokesperson at forums within and outside of NERC.
- Reports Committee activities to the NERC Board of Trustees and attends Board of Trustees meetings.
- Reports all views and objections when reporting on items brought to the Committee.
- Performs other duties as directed by the NERC Board of Trustees.
- Participates as a member of the Standing Committees Coordinating Group (SCCG).

## Duties of the Vice Chair

The Committee vice chair acts as the Committee chair if requested by the chair (for brief periods of time) or if the chair is absent or unable to perform the chair's duties. If the chair resigns prior to the next scheduled election, the vice chair shall act as the chair until the Committee selects a new chair. The vice chair:

- Assists the Committee chair in managing Committee meetings, including the nature and length of discussion, recognition of speakers, motions, and voting.

- Attends meetings of the NERC Board of Trustees in the chair's absence.
- Participates as a member of the SCCG.

## Duties of the Secretary

A member of NERC staff shall serve under the direction of the Committee officers as a non-voting secretary and has the responsibility to:

- Conduct the day-to-day operation and business of the Committee.
- Prepare, distribute and post notices of Committee meetings, record meeting proceedings, and prepare, distribute and post meeting minutes.
- Maintain a record of all Committee proceedings, including attendance, responses, voting records, and correspondence.
- Maintain Committee membership records.
- Offer newly elected Committee members onboarding training, in partnership with the Committee Chair and Vice Chair.

# Chapter 6: Voting Members' Expectations and Responsibilities

Voting members manage the NERC process to develop and maintain a comprehensive set of results-based Reliability Standards. Voting members have the following expectation and responsibilities:

- Contribute to the Committee's work and success by, among other things, executing the Committee Strategic Work Plan.
- Have familiarity with the Standard Processes Manual and ensure all actions adhere to the processes within.
- Serve as subject matter expert representatives of their industry segments and represent their industry segments.
- Be knowledgeable of NERC Reliability Standards development activities.
- Express opinions on behalf of their segments.
- Respond promptly to all Committee requests for attendance, reviews, comments and voting.
- Assist with outreach on the Reliability Standards development process.
- When unable to attend a Committee meeting notify the secretary and identify a proxy as described under Section 9. Meetings, sub section 9. Proxies, infra. The member shall instruct the proxy on the role and responsibilities.
- Duty of Care: Use due care and are diligent with respect to managing and administering the affairs of NERC and the Committee. This duty of care is generally thought to have two components: (i) the time and attention devoted to NERC's mission, and (ii) the skill and judgment reflected in the Committee's decisions.
- Duty of Loyalty: The duty of loyalty requires the members to faithfully promote the mission of NERC and the Committee, rather than their own or their entities' interests. This duty includes compliance with NERC's policies on conflicts of interest.
- Duty to Adhere to High Ethical Standards: The duty to adhere to applicable law and high ethical standards requires Committee members to devote themselves to ensuring they further NERC's stated objectives in compliance with legal requirements and high ethical standard

# Chapter 7: Executive Committee

The Committee shall have an Executive Committee (SCEC) consisting of no less than five or up to seven members as follows:

- Chair;
- Vice Chair;
- Three to Five segment members as elected by the Committee.
  The segment members cannot represent the same industry segments the Committee officers previously represented, nor can any two of the segment members be from the same segment.

Each member of the SCEC is a voting member, including the Chair and Vice Chair.

The Executive Committee will be elected annually at the January Committee meeting. In the event of an SCEC vacancy before conclusion of the term, an election will be announced at the next regularly scheduled Committee meeting to be conducted at the following Committee meeting.

The Executive Committee is authorized by the Committee to act on its behalf between regular meetings on matters where urgent actions are crucial and full Committee discussions are not practical. Each meeting of the SCEC acting on the Committee's behalf shall be open to all interested parties, subject to any preregistration requirements, and publicly noticed. The Committee shall be notified of such urgent actions taken by the SCEC within a week of such actions. These actions shall also be included in the minutes of the next open meeting.

Ultimate Committee responsibility resides with its full membership whose decisions cannot be overturned by the SCEC. The Committee retains the authority to ratify, modify, or annul SCEC actions.

Additionally, the Executive Committee shall have the authority to:

- Work with NERC Standards Staff to set agendas for Committee meetings.
- Act on the Committee's behalf to authorize solicitation of drafting team members, postings of SARs, Reliability Standards, and other Standards-related documents for both new and currently active standards development projects.
- Act on the Committee's behalf to authorize Section 16.0 Waivers to shorten usual process timelines.
- Provide advice and guidance to subcommittee chairs, as needed.
- Take any actions delegated by the full Committee.

# Chapter 8: Subordinate Groups

The SC organizational structure will be aligned as described by the NERC Bylaws to support a superior-subordinate hierarchy.

The SC may establish subcommittees, working groups, and task forces as necessary. The SC will be the responsible sponsor of all subordinate subcommittees, working groups, or task forces that it creates, or that its subordinate subcommittees and working groups may establish.

Officers of subordinate groups will be appointed by the chair of the SC.

Subcommittees, working groups, and taskforces will conduct business in a manner consistent with all applicable sections of this Charter.

## Subcommittees

The SC may establish subcommittees to which the SC may delegate some of SC's functions. The SC will approve the scope of each subcommittee it forms. The SC chair will appoint the subcommittee officers (typically a chair and a vice chair) for a specific term (generally two years). The subcommittee officers may be reappointed for an indefinite number of additional terms. The subcommittee will work within its assigned scope and be accountable for the responsibilities assigned to it by the committee. The formation of a subcommittee, due to the permanency of the subcommittee, will be approved by the NERC Board.

## Working Groups

The SC may delegate specific continuing functions to a working group. The SC will approve the scope of each working group that it forms. The SC chair will appoint the working group officers (typically a chair and a vice chair) for a specific term (generally two years). The SC will conduct a "sunset" review of each working group every year. The working group will be accountable for the responsibilities assigned to it by the SC or subcommittee and will, at all times, work within its assigned scope. The SC should consider promoting to a subcommittee any working group that is required to work longer than one term.

## Task Forces

The SC may assign specific work to a task force. The SC will approve the scope of each task force it forms. The SC chair will appoint the task force officers (typically a chair and a vice chair). Each task force will have a finite duration, normally less than one year. The SC will review the task force scope at the end of the expected duration and at each subsequent meeting of the SC until the task force is retired. Action of the SC is required to continue the task force past its defined duration. The SC should consider promoting to a working group any task force that is required to work longer than one year.

# Chapter 9: Meetings

## Open Meetings

Committee meetings shall be open to all interested parties, subject to any preregistration meeting requirements included in the meeting announcement. Meeting notices shall describe the meeting's purpose and identify a readily available source for further information about the meeting. Only voting members may act on items before the Committee. The Committee secretary shall post meeting notices and agendas on the NERC website contemporaneously with distribution to Committee members. The Committee secretary shall publicly post final minutes of Committee meetings on the NERC website within five business days of Committee approval.

## General Requirements

The Committee shall hold meetings as needed and may use conference calls or e-mail to conduct its business.

## Notice

The Committee secretary shall announce regularly scheduled meetings with a written notice (letter, facsimile, or e-mail) to all Committee members not less than ten nor more than sixty calendar days prior to the meeting date.

## Agenda

The secretary shall provide an agenda with a written notice (letter, facsimile, or e-mail) for Committee meetings no less than five business days before a proposed meeting.

- The agenda shall include, as necessary, background material for agenda items requiring a decision or vote. The secretary shall post the agenda on the NERC website the same day it is distributed to Committee members.
- Items not in the agenda that require a vote cannot be added at a meeting without the unanimous consent of the members present. If such a matter arises, it may also be deferred to the next meeting to allow Committee members to consult with their industry segments.

## Parliamentary Procedures

In the absence of specific provisions in this Charter, the Committee shall conduct its meetings guided by the most recent edition of *Robert's Rules of Order, Newly Revised*.

## Quorum

A quorum requires two-thirds of the Committee voting members.

## Voting

Voting may take place during regularly scheduled meetings or through electronic means.

- All Committee actions shall be approved upon receipt of the affirmative vote of a majority of the members present and voting at a meeting with a quorum present, with the exception of revisions to the Standard Processes Manual and the Committee Charter which can be approved only upon receipt of the affirmative vote of two-thirds of the members present and voting at a meeting with a quorum present.
- Each individual member's vote for each action taken shall be included in the minutes of each meeting, unless the vote is unanimous with no abstentions.

## Actions without a Meeting

The Committee may act by mail or e-mail ballot without a regularly scheduled meeting. A majority of the members participating in the voting is required to approve any action. A quorum for actions without a meeting is two-thirds of

Committee members. The Committee chair or four members (each from a different industry segment) may initiate the request for an action without a meeting. The secretary shall post a notice on the NERC website and provide Committee members a written notice (letter, facsimile, or e-mail) of the subject matter for action not less than three business days prior to the date on which the vote is to be counted. The secretary shall both distribute a written notice to the Committee (letter, facsimile, or e-mail) of the results of such action within five business days following the vote and post the results on the NERC website. The secretary shall keep a record of all responses (e-mails, facsimiles, etc.) from the Committee members with the Committee minutes.

## Waivers

From time to time it may be necessary to develop a new or modified Reliability Standard, definition, Variance, Interpretation, or implementation plan under specific time constraints (such as to meet a time constrained regulatory directive) or to meet an urgent reliability issue such that there isn't sufficient time to follow all the steps in the normal Reliability Standards development process. The Standards Committee may waive any of the provisions contained in the Standard Processes Manual for good cause shown, but limited to the circumstances established in Section 16.0 of the Manual. A waiver request may be submitted to the Committee by any entity or individual. Prior to consideration of any waiver request, the Standards Committee must provide five business days' notice to stakeholders. This provision shall not be used to modify the requirements for achieving quorum or the voting requirements for approval of a standard.

## Proxies

A Committee member may designate a proxy. Proxies may attend and vote at Committee meetings provided the absent Committee member notifies in writing (letter, facsimile, or e-mail) the Committee chair, vice chair or secretary along with the reason(s) for the proxy. The member shall name the proxy representative and affiliation in the correspondence. No Committee member can serve as a proxy for another Committee member. The proxy must adhere to the Voting Members' Expectations and Responsibilities as described in Section 6, above.

# Compliance and Certification Committee Membership

## Action
Approve

## Background
On November 28, 2023, the Compliance and Certification Committee Nominating Subcommittee (CCC NS) issued a request for nominations to fill vacancies in Sector 2, State/Municipal (1), Sector 6, Merchant Electricity Generator (1), and Member At-large (1).

The CCC Nominating Subcommittee uses the following criteria when selecting nominees:

- Senior-level industry expertise;
- Knowledge of topics within the scope of the CCC;
- Experience within their respective organizations in at least one of the following areas:
  - Compliance Administration
  - Compliance Enforcement
  - Risk Management
  - NERC Registration
  - NERC Certification
  - NERC Standards;
- Geographical representation;
- Adherence to CCC expectations (if applicable);
- Participation in other ERO committees, trade organizations, membership organizations (NATF, NAGF, etc.), or regional forums;
- Input from the CCC Executive Committee.

## Summary
On January 3, 2023, the CCC NS considered eight nominees and approved three for membership, pending NERC Board of Trustees (Board) approval. The CCC requests NERC Board approval of the following appointments to the CCC:

- Sector 2, State/Municipal – Mike Bowman, City Utilities of Springfield, MO. (Term thru 12/31/2024). Mr. Bowman was selected based on his experience and participation in trade organizations and other NERC/ERO forums.
- Sector 6, Merchant Electricity Generator – Hernando Zorillo, Acciona Energia (Term thru 12/31/2024). Mr. Zorillo was selected based on Sector membership.
- Member At-large – Ruchi Shah, AES Clean Energy (Term thru 12/31/2026). Ms. Shah was selected due to her experience, geographical representation, and participation in trade organizations and other NERC/ERO forums.

# Personnel Certification Governance Committee (PCGC) System Operator Certification Manuel

## Action
Approve

## Summary
The PCGC presents to the Board of Trustees an updated System Operator Certification Manual for consideration and approval. The attached mapping document provides a summary of revisions between Version 4.0, February 2022, and Version 4.1, February 2024.

## Attachments

- System Operator Certification Manual V4.1 (Redline)
- System Operator Certification Manual V4.1 (Clean)
- System Operator Certification Manual Mapping Document V4.0 to V4.1

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# System Operator Certification Program Manual

Approved by
NERC Board of Trustees

RELIABILITY | RESILIENCE | SECURITY




3353 Peachtree Road NE
Suite 600, North Tower
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404-446-2560 | www.nerc.com

# Table of Contents

# Preface

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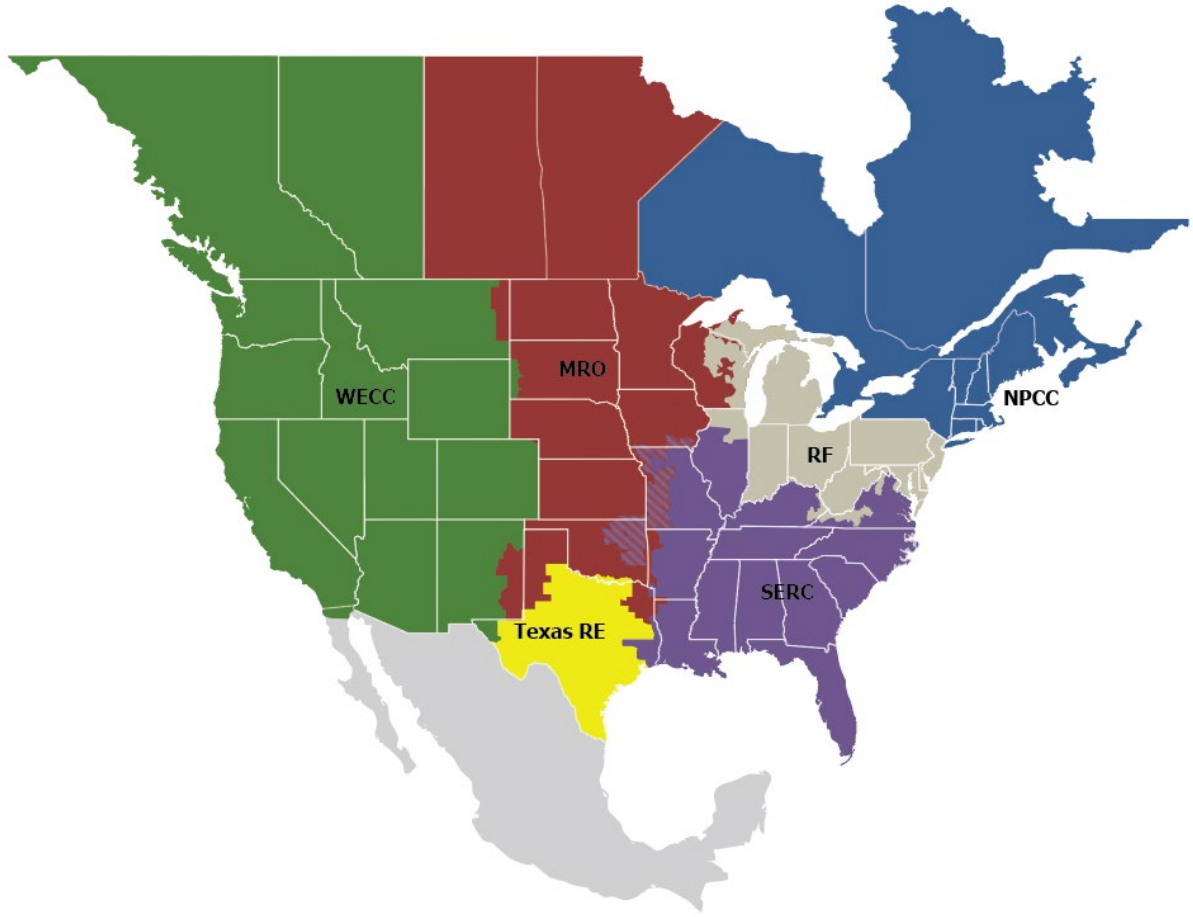
The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.




| | |
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| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ReliabilityFirst |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

# Introduction

The System Operator Certification Program promotes skilled and qualified system operators to ensure the reliability of the Bulk Electric System (BES).

NERC does not and shall not discriminate on the basis of age, gender, race, religion, national origin, disability, sexual orientation, or marital status in its implementation of the System Operator Certification Program.

The System Operator Certification Program provides the framework for operators to obtain initial certification in one of four NERC credentials: Reliability Coordinator Operator; Balancing, Interchange, and Transmission Operator; Transmission Operator; and Balancing and Interchange Operator. A system operator credential is a personal credential that NERC issues to a person for successfully passing a NERC System Operator Certification Exam. Each credential focuses on a specific functional area of system operations. Operators maintain each credential by accumulating a specified number of continuing education hours (CEH) within a specified period of time.

The NERC Credential Maintenance Program, as stated in the NERC Rules of Procedure,[1] provides a framework for the development and tracking of high-quality learning activities that qualify for CEHs.

The Credential Maintenance Working Group (CMWG) reports to the Personnel Certification Governance Committee (PCGC) and is responsible for overseeing the development and implementation of Credential Maintenance Program requirements under the general guidelines set by the PCGC.

The CMWG shall develop and update, as necessary, the *Credential Maintenance Program Administration Manual;*[2] this manual describes the following:

- Requirements for approving credential maintenance providers and structured learning activities
- Requirements for auditing credential maintenance providers and structured learning activities
- A multilayered review process for disputed application reviews, interpretations of guidelines and standards, probation or suspension of NERC-approved provider status, and CEH disputes
- Requirements on fees for credential maintenance providers and structured learning activities

The NERC PCGC is the governing body that establishes policies, sets fees, monitors the performance of the System Operator Certification Program, and ensures that the program is financially independent. NERC is the program administrator and maintains databases, records, applications, and contracts with vendors. NERC also collects fees, responds to inquiries, and provides reports on related system operator certification activities.

[1] https://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx
[2] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

# Chapter 1: Certification Examinations

## Overview

Through the System Operator Certification Program, NERC awards certification credentials to individuals who demonstrate that they have attained sufficient knowledge relating to NERC Reliability Standards as well as the basic principles of BPS operations by passing one of four examinations. NERC issues a certificate to the candidate who successfully completes an examination, and it remains valid for three years.

Members of the Exam Working Group (EWG) represent each of the areas tested in the examinations. The direct involvement of system operators, supervisors, and trainers in the examination development process is a primary requirement for NERC system operator certification examinations. The EWG develops the examinations under the guidance of a psychometric consultant. The EWG bases the examinations on content outlines developed through a job analysis. The EWG places each question in a "pilot" (not scored) position on the examination before using it in a "scored" position. Only questions that meet acceptable performance criteria can be placed in a scored position on an exam. The EWG continually tracks the performance of every question used in a scored position.

## Examinations

There are four examinations:

- Reliability Coordinator Operator
- Balancing, Interchange, and Transmission Operator
- Transmission Operator
- Balancing and Interchange Operator

These computer-based exams consist of questions with multiple-choice answers. The content outlines can be accessed from the System Operator Certification and Credential Maintenance Program.[3] The PCGC approves the passing score for each new published exam, and the score can be found on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[4] web page with exam resources.

The number of correct responses required to pass (cut score) is set by a panel of practitioners using a rigorous standard setting methodology. This methodology requires subject matter experts to establish a definition of minimum acceptable competence for each examination and conduct an evaluation of each examination question in order to set the minimum level of performance necessary on each examination to demonstrate competence (**Table 1.1**).

**Table 1.1: System Operator Examinations**

| Examination Title | Designation | Total Questions | Scored Questions | Cut Score* |
|---|---|---|---|---|
| Reliability Coordinator Operator | RC | 140 | 120 | 92 |
| Balancing, Interchange, and Transmission Operator | BT | 140 | 120 | 92 |
| Transmission Operator | TO | 120 | 100 | 76 |

[3] http://www.nerc.com/pa/Train/SysOpCert/Pages/default.aspx
[4] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

| Table 1.1: System Operator Examinations | | | | |
|---|---|---|---|---|
| **Examination Title** | **Designation** | **Total Questions** | **Scored Questions** | **Cut Score*** |
| Balancing and Interchange Operator | BI | 120 | 100 | 76 |

*Effective June 1, 2020

Each candidate's examination is developed to be equal in difficulty level to other candidates' examinations to ensure that a fair and consistent standard is applied to each candidate. To this end, each examination consists of scored examination questions that have been administered to candidates and have acceptable statistical characteristics.

# Examination Process

## Examination Application Process

Candidates must create an account (see **Figure 1.1**) in the System Operator Certification and Continuing Education Database[5] (SOCCED) in order to register and pay for an exam. After the candidate has paid for the exam, SOCCED will send the candidate exam information to the exam vendor, PSI. PSI will send the candidate an email with the information needed to schedule their exam.

Once paid for, the exam application is valid for one year after the issuance date and can only be used once. If a candidate fails to schedule and sit for the exam within the one-year eligibility period, the candidate shall forfeit the exam fee to NERC.

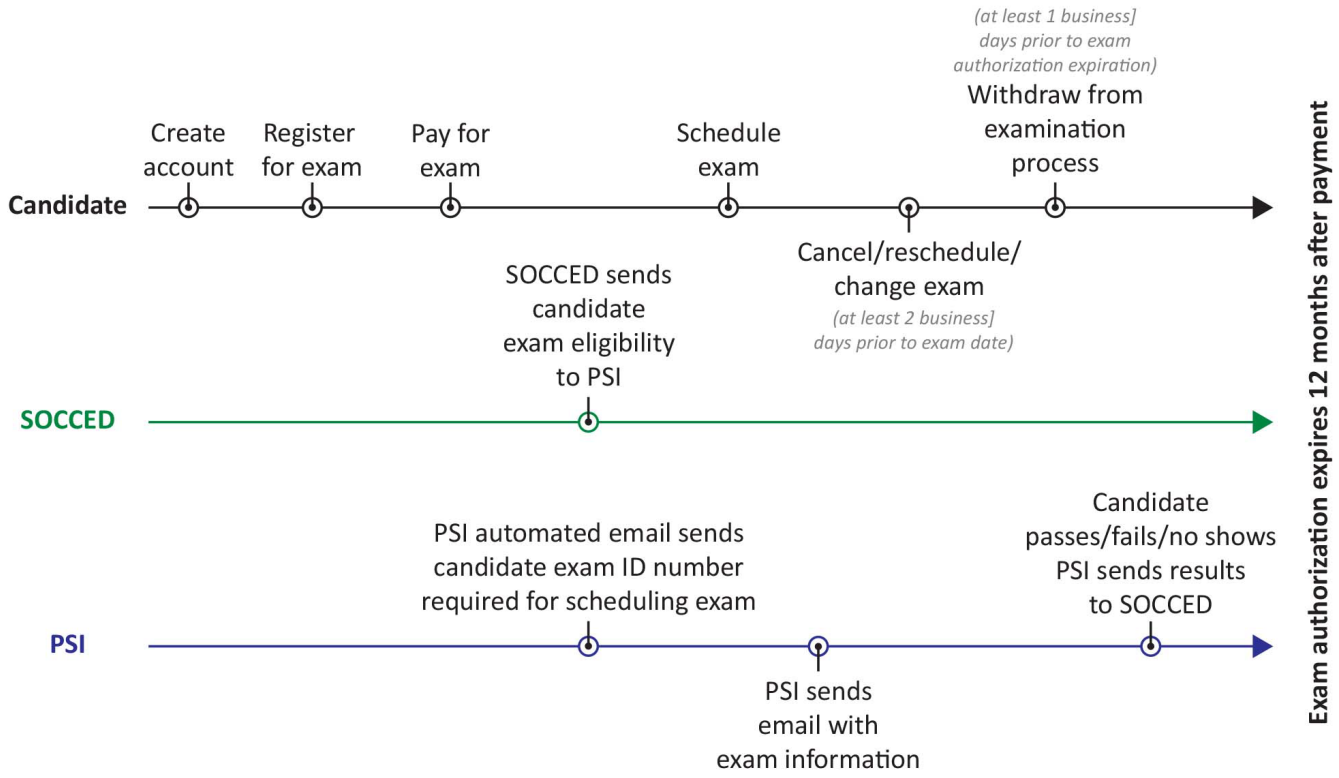



**Figure 1.1: NERC Certification Process Flowchart**

[5] https://nerc-socced.useclarus.com/

## Scheduling an Examination Appointment

After the candidates received the email notification from PSI, the candidate can schedule an appointment for testing, using PSI's website.[6] Candidates should follow the instructions for scheduling an exam that are sent from PSI. Examination appointments are subject to the availability of each test center.

**Note:** When a candidate schedules a test date, PSI will issue the candidate a confirmation number. Candidates should retain this number. It is required for check-in, for PSI's automated cancellation system, or if there is a conflict with the test center appointment. FAQs and the Candidate Information Bulletin are on the PSI website.

## Canceling and Rescheduling Examination Appointments

Candidates may cancel and reschedule examination appointments without forfeiting the examination fee if the cancellation notice is provided to PSI by close of business time of that test center at least two business days prior to the scheduled exam appointment time. Examination fees are nonrefundable and nontransferable.

To cancel or reschedule exam appointments, visit PSI's website or call PSI at 800-733-9267 and speak to a PSI customer service representative. A voice mail message is not an acceptable form of cancellation.

## Examination Type Change Request

Candidates may change the examination type they previously registered for by using the SOCCED within the existing exam eligibility period. Candidates should also notify NERC by submitting a request[7] via the SOCCED Help Center. When PSI receives the examination change, they will send the candidate an email with updated exam information. After candidates receive their new exam information from PSI, they must schedule/reschedule an appointment with PSI to take the exam. Notification must be received by PSI no later than close of business time of that test center at least two business days prior to the scheduled exam appointment for making this change or for submitting any additional change.

## Withdrawal from Examination Process

The eligibility period lasts until one year after the date the candidate pays for the exam. If a candidate wishes to withdraw from the process within the one-year period for any reason, the candidate must request a withdrawal by close of business the day before the last eligibility day by submitting a request via the SOCCED Help Center. Candidates who submit the request within the time period will be reimbursed for the fees submitted to NERC except the withdrawal fee. The candidate will forfeit all submitted fees if the candidate fails to properly withdraw.

**Note:** If a candidate has already scheduled an appointment with PSI to take the exam, the candidate must cancel that appointment with PSI or forfeit the exam fee.

## Special Accommodations Requests

Requests submitted for special accommodations covered by a recognized disability, will be reviewed by NERC Staff. Requests must be supported by the Special Accommodation Request Form and a letter from a recognized health care provider, signed by a health professional. NERC will review each request and provide appropriate Special Accommodations, if warranted. The decision will be included in the notice of eligibility approval/denial sent to the applicant.

[6] https://schedule.psiexams.com/
[7] https://soccedsupport.zendesk.com/hc/en-us/requests/new

When making requests for Special Accommodations, applicants must notify the NERC Manager of Personnel Certification and Credential Maintenance by submitting a ticket to the SOCCED Help Center at least four (4) weeks prior to the scheduled exam appointment.

**Note:** It will take the exam vendor 7 – 10 business days to accommodate an approved request. If the candidate already has their exam schedule they will need to take this into consideration. Special accommodatons may impact the availability of testing locations.

## Taking the Exam

Candidates should arrive and be inside the testing center at least 30 minutes prior to the examination start time for the Administration and Review of Candidate Identification and should allocate at least a total of four hours to accommodate the testing process (**Table 1.2**).
Candidates must show two current valid forms of identification to be admitted into the examination: one primary form of identification and either another primary or a secondary form of identification:

- Primary identification is a government-issued form of identification and must have both your picture and your signature on it. Examples of primary identification are a driver's license, a government issued identification card, a passport, a temporary visa, or a military ID.
- Secondary identification must have a name and either your picture or your signature or both. Acceptable forms of secondary IDs are an employment ID, credit card, or debit card.

The PSI testing center will not accept altered, expired, or damaged identifications. If there is any discrepancy between the name on the candidate's identification and the NERC registration, the testing center will not allow that candidate to test.

**Table 1.2: Examination Time Allocation**

| Examination Stages | Time Allocation |
|---|---|
| Administration and Review of Candidate Identification | 30 minutes |
| Computer-Based Tutorial | 15 minutes |
| Examination | 3 hours |
| Post-Examination Survey | 15 minutes |
| **Total Time to be Allocated** | **4 hours** |

## Testing Center Regulations

- Depending on the established criteria at the testing center, candidates who arrive late may not be allowed to sit for the examination. Late arrivals that are not permitted to take the examination will be considered no-shows and must reapply and pay the full test fee to take the examination.
- Candidates cannot bring reference materials, calculators, cell phones, or recording equipment into the examination. Some testing centers may not have lockers to accommodate personal items. Do not bring personal items, besides your appropriate ID, into the test center.
- No test materials, documents, notes, or scratch paper of any sort may be taken from the examination (pencils, paper, and an online calculator will be provided).
- Visitors are not permitted during the examination.

- Testing center staff can only answer questions about testing procedures; they cannot respond to inquiries regarding the examination's content.
- During the examination, candidates may use the restrooms; however, the examination clock will continue running during that time.
- Candidates may not leave the testing center until they have finished the exam.
- Smoking is not permitted in the testing center.
- Any candidate giving assistance, receiving assistance, or making a disturbance will be required to turn in their examination materials, exit the examination room, and leave the testing center. The Disciplinary Action Procedure will be initiated upon notification to NERC that the incident occurred.
- Any instances of cheating or attempts to impersonate another candidate will be dealt with through the Disciplinary Action Procedure.
- If the testing center regulations differ from what is noted above, the testing center regulations should be followed.

**Note:** All no-shows will have to reapply and pay the full test fee to take the examination.

## Results of Exam

A pass/fail score report will be given at the end of exam. The PSI testing center will provide a summary of the examination before a candidate leaves.

Candidates who pass the examination will receive the appropriate NERC-certified system operator certificate signed by the NERC CEO. The date on the certificate will be the date the candidate passed the examination.

## Confidentiality of Exam Questions

The exam questions are the sole property of NERC and are confidential. Candidates are prohibited from downloading, taking screens shot of, or otherwise copying the exam questions in any format. Distributing, transferring, selling or otherwise sharing or publicly posting exam questions is strictly prohibited. Candidates that engage is such activity will have their credentials revoked and may be subject to other consequences as the law permits.

## Time between Examinations

Candidates who fail an exam must wait 42 calendar days from the date of the failed examination to sit for any of the four NERC credential exams. Candidates who pass one of the NERC system operator certification examinations may not take that exam again unless their credential has expired. SOCCED automatically sets a credential to expire four years from exam pass date if the credential maintenance requirements are not met.

## Confirmation of Credential to Third Parties

NERC will confirm to an employer that an individual holds a valid NERC system operator certificate and will release the certificate number and issuance date in response to a written request.

NERC will release the certificate numbers and issuance dates for individuals holding a current NERC system operator certificate to the regional compliance staff or designated agents of registered entities in which an individual's employer operates in response to a written request.

NERC will confirm to an employment search firm or a potential employer whether an individual holds a valid NERC system operator certificate, including releasing the certificate number and the issuance date, if the search firm or potential employer has a release from the individual.

# Chapter 2: Credential Maintenance

## Overview

The System Operator Certification Program includes a requirement to maintain certification by obtaining CEHs. Successfully passing an examination earns candidates a credential and a certificate that is valid for three years. NERC requires certified system operators to accumulate CEHs through the NERC Credential Maintenance Program in recognized operator training topics, as listed in **Appendix A** for credential maintenance. To maintain a valid credential, candidates must accumulate the proper number and type of CEHs from NERC-approved learning activities within a three-year period. The system operator must meet the requirements and pay for their renewal in SOCCED. Upon transcript review and approval, NERC will issue a new certificate with the new expiration date.

### Program Requirement Summary

1. System operators seeking to obtain a credential must pass an examination.
2. NERC will issue a certificate that is valid for three years to successful candidates.
3. To maintain a valid certification, a system operator must earn CEHs within the three-year period preceding the expiration date of their certificate as specified by their credential in **Table 2.1** and adhering to the timeline in **Figure 2.1**. The CEHs must include the following:
    a. A minimum of 30 CEHs that focus on content and/or implementation of NERC standards.
    b. A minimum of 30 CEHs that utilize simulations (i.e., tabletop exercises, operator training simulators, emergency drills or practice of emergency procedures, restoration, blackstart, or other reliability-based scenarios).

**Note**: Reference the *Credential Maintenance Program Administrative Manual*[8] for additional information.

**Table 2.1: Credential Maintenance Requirements**

| Certification | Designation | Total CEH Requirement | NERC Standard CEH Requirement | Simulation CEH Requirement |
|---|---|---|---|---|
| Reliability Coordinator Operator | RA, RC | 200 | 30 | 30 |
| Balancing, Interchange, and Transmission | BT | 160 | 30 | 30 |
| Transmission Operator | TO | 140 | 30 | 30 |
| Balancing and Interchange | BI | 140 | 30 | 30 |

[8] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

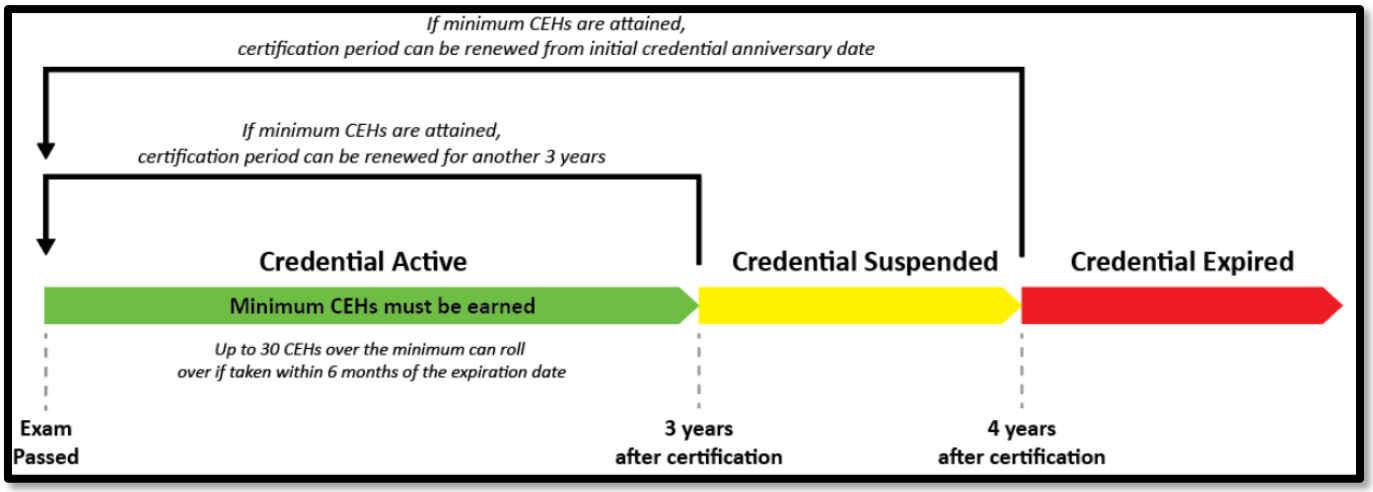



**Figure 2.1: NERC Credential Maintenance Process Flor**

4. System operators satisfying the credential maintenance requirements must submit a renewal request for their credential and pay the renewal fees through the SOCCED.
5. The NERC system operator credential can be maintained only by earning the appropriate number and type of CEHs.
6. Certified system operators that do not accumulate enough CEHs to maintain their current credential prior to the certificate expiration date will have their credential suspended for a maximum of one year.
7. If the appropriate number of CEHs have not been obtained at the end of the suspension period, the credential will expire**.**
8. Certified system operators can accumulate the proper number and type of CEHs during the suspension period and have their credential reinstated with the original expiration date (three years after the previous expiration date).

**Note:** See **Chapter 7: Glossary**.

> CEHs can concurrently count for the total number required, the NERC standards required, and the simulations but will only be counted once for the total CEHs requirement.
>
> For example: A three-hour learning activity that includes one hour of instruction and a two-hour simulation on the implementation of NERC standards will be counted as three hours toward the total requirement, two hours toward the standards requirement, and two hours toward the simulation requirement.

9. System operators with expired credentials will have to pass an examination to become recertified.

## Deficits of CEHs for Credential Holders

A system operator who does not accumulate the required CEHs within the three-year period will have their credential suspended. The system operator with a suspended certificate may not perform any task that requires an operator to be NERC certified. The system operator with a suspended credential will have up to 12 months to acquire the necessary CEHs. The original anniversary date (three years after the previous expiration date) does

not change. The system operator will still need to accumulate the required number of CEHs prior to the next expiration date. NERC will maintain a record of the suspension.

SOCCED maintains the record of expiration in the Eastern Time Zone.

For example:

A system operator whose credential expires July 31, 2024, and who does not accumulate the required number of hours prior to that date, will have their credential suspended on July 31, 2024, 23:59.

If the system operator accumulates and submits the required number of hours on March 1, 2025, the credential will be reinstated and will be valid until July 31, 2027, which is three-years from the original expiration date of July 31, 2024.

The system operator will then have to accumulate the required number of hours prior to July 31, 2027, 23:59 or the credential will be suspended again.

CEHs previously used for credential maintenance cannot be reused.

If the system operator does not accumulate the required number of CEHs at the end of a 12-month suspension period, the credential will expire and the system operator will forfeit all CEHs earned. After a credential expires, the system operator must pass an examination to become recertified.

## Rollover Hours

For all credentials, some CEHs may be carried over to the next certification period. Up to 30 CEHs accumulated in the six months prior to the certificate expiration date that are not used for credential maintenance or change of credential type may be carried over. Categorization of CEHs in the "standards" category or the "simulation" category will not be carried over into the next period. To satisfy the CEH requirement, CEHs will be used starting with the first learning activity that occurred, according to the calendar, then sequentially by the date of the learning activities. See **Figure 2.2** for an example of rollover hours.

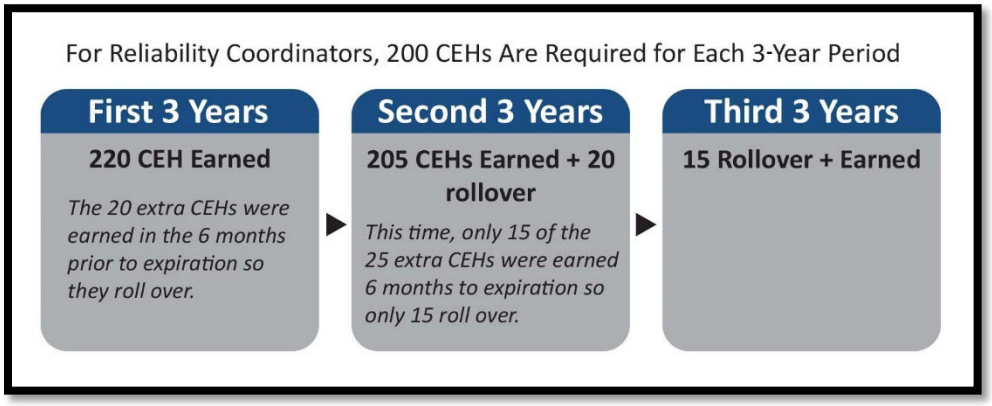



**Figure 2.2: Certification Periods for Reliability Coordinator Credential (200 CEHs Required)**

## NERC Continuing Education Providers

NERC continuing education (CE) providers report the CEHs earned by each certified system operator to NERC electronically through the SOCCED. Providers are also required to provide the certified system operator proof of having earned the CEHs.

## System Operator

System operators are able to track their status toward maintaining their credential through the NERC SOCCED. Certified system operators should review their transcripts at least 90 days up to 6 months before their certificate expiration date to allow sufficient time to acquire CEHs should there be a conflict. If a conflict occurs, the certified system operator shall submit proof of having acquired the necessary CEHs from the Credential Maintenance Program's approved learning activities to the NERC manager of personnel certification and credential maintenance. The system operator must submit at least 30 days before the certificate expiration date to allow NERC staff time to process and resolve discrepancies and prevent the credential from being suspended. NERC will reinstate suspended credentials once proof of completion is verified.

System operators who meet the CEH requirements must pay for their renewal through SOCCED. The system operator may print a new certificate from SOCCED. The new certificate will have an expiration date that is three years from the previous expiration date. Renewal requests should be submitted no more than six months prior to expiration date.

## Changing Certification Levels

A certified system operator who wants to change to a different credential that requires fewer CEHs may do so when they meet the proper number and type of hours for the new credential. A certified system operator can change their credential type by indicating the desire to do so in SOCCED when requested to renew.

See the following to change a credential:

- **Reliability Coordinator Operator (RC) to any other NERC credential**: a system operator who has obtained the proper number and type of hours for the new credential may renew to any NERC system operator credential.
- **Balancing, Interchange, and Transmission Operator (BT) to Transmission Operator (TO) or Balancing and Interchange Operator (BI)**: a system operator will have the option to renew to a TO or BI credential when the proper number and type of hours for the new credential have been obtained.
- **Balancing, Interchange, and Transmission Operator (BT) to Reliability Coordinator Operator (RC)**: a system operator must pass the examination for the Reliability Operator credential.
- **Balancing and Interchange Operator (BI) to any other NERC credential**: a system operator must pass the examination for that credential.
- **Transmission Operator (TO) to any other NERC credential**: a system operator must pass the examination for that credential.

# Chapter 3: Hardship Clause (NERC Rules of Procedure)

Hardship is when unforeseen events and extenuating circumstances occur that place excessive burden on a system operator to earn or maintain a credential. To initiate the hardship clause process, the system operator must submit complete the Hardship Request Form[9] located on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[10] page.

The completed Hardship Request Form should be submitted via the SOCCED Help Center[11] Attention: Manager Personnel Certification and Credential Maintenance.

Following the PCGC's process, the Personnel Certification and Credential Maintenance manager will provide the hardship request to the PCGC's Hardship and Dispute Resolution Task Force (HDRTF) for review. The HDRTF makes the determination on approval or rejection of the request.

The PCGC retains the right to invoke the hardship clause and deviate from the program rules as it deems appropriate to address such events or circumstances. Examples of extenuating circumstances include (but are not limited to) military service or an illness/disability of the system operator or within the system operator's immediate family that results in an extended period of time away from work.

[9] https://www.nerc.com/pa/Train/SysOpCert/System%20Operator%20Certification%20DL/SOC_Hardship_Request_Form.pdf
[10] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx
[11] SOCCED HELP CENTER (zendesk.com)

# Chapter 4: Program Rules

## Overview

NERC will recognize CEHs for credential maintenance only from operator training topics and learning activities listed in **Appendix A** and if providers have complied with the Credential Maintenance Program[12] rules. See the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[13] for the *Credential Maintenace Program Administrative Manual* and other references.

## Learning Activities

- **Emergency Operations Training Topics**

  CEHs for emergency operations will be recognized for credential maintenance twice a year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary). CE courses can count as emergency operations courses if the training is related to emergency preparedness, operational communications and situational awareness, analysis and troubleshooting, or the response to any emergency as defined by NERC: Any abnormal system condition that requires automatic or immediate manual action to prevent or limit the failure of transmission facilities or generation supply that could adversely affect the reliability of the BES.

- **Other Training Topics**

  NERC will recognize CEHs for a particular course or learning activity—other than emergency operations training—for credential maintenance once a year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary).

- **Instructor Training**

  For instructors who are also certified system operators, NERC will recognize 1.0 CEH for each CEH of a learning activity delivered toward the instructor's system operator credential maintenance. Emergency operations topics can be counted twice per year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary).

- **Proof of Course Completion**

  A certified system operator is responsible for retaining appropriate documentation for proof of credential maintenance. Documentation includes the following:

  - The learning activity's title and identification number
  - The date(s) of the learning activity
  - The number and type of CEHs
  - The system operator's NERC certificate number

Training providers shall retain comparable documentation. Electronic forms of documentation are acceptable.

### Learning Activity Status Changes

NERC will grant CEHs for a course or learning activity approved for credential maintenance. If a system operator attends an approved learning activity that is later revoked or expired, NERC will still recognize CEHs from that activity while it was approved.

[12] https://www.nerc.com/pa/Train/SysOpCert/Pages/default.aspx
[13] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

## Disputes between Certified System Operators and Providers

If there is a dispute between a provider and a certified system operator, the parties must resolve the dispute without involvement from NERC. Additionally, it is the obligation of certified system operators to periodically review their CEH records in the NERC SOCCED and maintain their own training records to provide proof of achieving CEH requirements.

## Fees

NERC uses fees for the ongoing expense to develop and maintain the certification program. The fees also cover the expense of the management and administrative costs associated with the examination process and credential maintenance. The PCGC periodically reviews and adjusts these fees. NERC posts these fees on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[14] page.

## Legal Name Changes

If a system operator changes their legal name, the system operator must submit a written request containing an explanation of the circumstance and copies of the legal documentation of the name change to the following:

NERC Personnel Certification and Credential Maintenance Manager
3353 Peachtree Road NE, Suite 600, North Tower
Atlanta, GA 30326

Or submit a request[15] via the SOCCED Help Center

[14] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx
[15] https://soccedsupport.zendesk.com/hc/en-us/requests/new

# Chapter 5: Dispute Resolution (NERC Rules of Procedure)

## Overview

Any dispute arising under the NERC agreement that established the NERC System Operator Certification Program or from the establishment of any NERC rules, policies, or procedures that deal with any segment of the certification process or as a result of disciplinary action shall be subject to the NERC System Operator Certification Dispute Resolution Process. The Dispute Resolution Process is for the use of individuals who hold a NERC system operator certification or individuals wishing to be certified to dispute the validity of the examination, the content of the test, the content outlines, or the registration process.

## Dispute Resolution Process

1. **NERC System Operator Certification Program Staff**

   The first step in the process is for the person with a dispute to contact the NERC System Operator Certification Program staff. This can be done by Submit a Request[16] via the SOCCED Help Center. This first step can usually resolve the issue, and if it does, no further action is needed. If the issue is not resolved, the issue can be brought to the PCGC Dispute Resolution Task Force.

1. **Personnel Certification Governance Committee Dispute Resolution Task Force**

   If NERC staff did not resolve the issue to the satisfaction of the parties involved, a written request must be submitted to the chairperson of the PCGC through NERC staff within 45 days of the conversation with NERC staff explaining the issue(s) and requesting further action. Upon receipt of the letter, the PCGC chairperson will present the request to the PCGC Dispute Resolution Task Force for action. This task force consists of three current members of the PCGC. The PCGC Dispute Resolution Task Force will investigate and consider the issue presented and make a decision. This decision will then be communicated to the submitting party, the PCGC chairperson, and NERC staff within 45 calendar days of receipt of the request.

   If a French-Canadian or Mexican party raises a dispute, the PCGC shall appoint a French-Canadian interpreter or a Spanish interpreter as requested.

2. **Personnel Certification Governance Committee**

   If the PCGC Dispute Resolution Task Force's decision did not resolve the issue(s) to the satisfaction of the parties involved, the final step in the process is for the issue(s) to be brought before the PCGC. Within 45 days of the date of the task force's decision, the disputing party shall submit a written request to the PCGC chairperson through NERC staff requesting that the issue(s) be brought before the PCGC for resolution. The chairperson shall see that the necessary documents and related data are provided to the PCGC members as soon as practical. The PCGC will then discuss the issue(s) and make their decision within 60 calendar days of the chairperson's receipt of the request. The decision will be provided to the person bringing the issue(s) and the NERC staff. The PCGC is the governing body of the certification program, and its decision on all disputes is final.

### Process Expenses

All individual expenses associated with the process, including salaries, meetings, and consultant fees shall be the responsibility of the individual parties incurring the expense.

[16] https://soccedsupport.zendesk.com/hc/en-us/requests/new

## Decision Process

*Robert's Rules of Order* shall be used as a standard of conduct for the process. A majority vote of the members present will decide all issues. The vote will be taken in a closed session. No member of the PCGC may participate in the dispute resolution process other than the party or a witness that has an interest in the particular matter.

A stipulation of invoking the appeals process is that the party requesting the appeal agrees that neither NERC (its members, Board of Trustees, committees, subcommittees, and staff), any person assisting in the appeals process, nor any company employing a person assisting in the appeals process, shall be liable, and they shall be held harmless against the consequences of any action or inaction as well as harmless against any agreement reached in resolution of the dispute or any failure to reach agreement as a result of the appeals proceeding. This "hold harmless" clause[17] does not extend to matters constituting gross negligence, intentional misconduct, or a breach of confidentiality.

[17] NERC Rules of Procedure; Section 5.1

# Chapter 6: Disciplinary Actions (NERC Rules of Procedure)

## Overview

This Disciplinary Action Procedure is necessary to protect the integrity of the system operator credentials. Should an individual act in a manner that is inconsistent with expectations, this procedure describes the process to investigate and take action necessary to protect the credential.

## Grounds for Action

The following shall serve as grounds for disciplinary action:

- Willful violation and/or a gross violation of the NERC standards as determined by a NERC investigation
    - Both the organization and the certified system operator are bound by the NERC Reliability Standards. If a certified system operator, either in concert with the organization or on their own initiative, performs a willful violation and/or a gross violation of the NERC standards the organization and the certified system operator are both liable for those actions and disciplinary actions may be taken against them.
- Willful negligence and/or a gross negligence in performing the duties of a certified system operator as determined by a NERC investigation
- Intentional misrepresentation of information provided to NERC for a system operator certification exam or to maintain a system operator credential using CEHs
- Intentional misrepresentation of identification in the exam process, including an individual identifying as another person to obtain certification for the other person
- Any form of cheating during a certification exam that includes, but is not limited to, bringing unauthorized reference material in the form of notes or other materials into the testing center
- A certified system operator's admission to or conviction of any felony or misdemeanor directly related to their duties as a system operator
- Creating a second account in SOCCED in order to register and pay for an exam under a different login and/or account name in order to bypass the 42 day wait period between examinations

## Hearing Process

Upon the report to NERC of a candidate's or certified system operator's alleged misconduct, the PCGC Credential Review Task Force will convene for the determination of facts. An individual, government agency, or other investigating authority may file a report. Unless the task force initially determines that the report of alleged misconduct is without merit, the candidate or certified system operator will be given the right to receive notice of the allegation. A hearing will be held and the charged candidate or certified system operator will be given an opportunity to be heard and present further relevant information. The task force may seek out information from other involved parties. The hearing will not be open to the public, but it will be open to the charged candidate or the certified system operator and their representative. The task force will deliberate in a closed session, but the task force cannot receive any evidence during the closed session that was not developed during the course of the hearing.

## Task Force's Decision

The task force's decision will be unanimous and will be in writing with inclusion of the facts and reasons for the decision. The task force's written decision will be delivered to the PCGC (via email) and to the charged candidate or the certified system operator. In the event that the task force is unable to reach a unanimous decision, the matter shall be brought to the full committee for one of the following decisions:

- **No Action:** The allegation of misconduct was determined to be unsubstantiated or inconsequential to the credential.
- **Probation:** NERC will send a letter to the offender specifying the length of probationary period (to be determined by the PCGC).
  - The Credential will remain valid during the probationary period.
  - The probationary period does not affect the expiration date of the current certificate.
  - During the probationary period, a subsequent offense of misconduct, as determined through the same process described above, may be cause for more serious consequences.
- **Revoke for Cause:** NERC will send a letter to the offender specifying the length of the revocation period (to be determined by the PCGC).
  - Credential is no longer valid.
  - Offender must successfully pass an exam to become recertified.
  - An exam will not be authorized until the revocation period expires.
- **Termination of Credential:** NERC will send a letter to the offender specifying permanent revocation of credential, and the offender will not be approved to sit for a future examination.

## Credential Review Task Force

A Credential Review Task Force shall be comprised of three active members of the PCGC assigned by the chairperson of the PCGC on an ad hoc basis. No one on the credential review task force may have an interest in the particular matter. The task force will meet in a venue determined by the task force chairperson.

If a French-Canadian or Mexican party raises a dispute, the PCGC shall appoint a French-Canadian interpreter or a Spanish interpreter as requested.

## Appeal Process

The decision of the task force may be appealed using the NERC System Operator Certification Dispute Resolution process (see **Chapter 4:**).

# Chapter 7: Glossary

G01. **Continuing Education Hour (CEH):** Based on 60 clock minutes and includes at least 50 minutes of participation in a group or self-study learning activity that meets the criteria of the NERC Credential Maintenance Program.

G02. **Continuing Education (CE) Provider**: The individual or organization responsible for setting learning objectives, developing the curriculum to achieve such objectives, offering a learning activity to participants, and maintaining documentation required by these criteria. The term CE Provider may include NERC, REs, operating and marketing entities, technical and industry societies and associations (whether formal or informal), consultants, vendors, colleges, universities, and training companies as well as employers who offer in-house learning activities.

G03. **Certification:** An official recognition that indicates the recipient has passed a NERC exam or completed a specified number of CEHs.

G04. **Credential:** NERC designation that indicates the level of qualification achieved (i.e., Reliability Operator; Balancing, Interchange, and Transmission Operator; Balancing and Interchange Operator; and Transmission Operator).

G05. **Credential Maintenance:** Meet NERC CEH requirements to maintain a valid NERC-issued system operator credential.

G06. **Expired:** A NERC certificate that has been suspended for more than 12 months. While in this state, a certificate holder cannot perform any task that requires an operator to be NERC certified. The certificate holder will be required to pass an exam to be certified again. Any CEHs accumulated prior to or during the expiration period will not be counted toward certificate maintenance.

G07. **NERC-Approved Learning Activity**: Training that maintains or improves professional competence and has been approved by NERC for use in its Credential Maintenance Program.

G08. **Probation:** A step in the disciplinary process during which the certificate is still valid. During the probationary period, a subsequent offense of misconduct, as determined through the same process as described above, may be cause for more serious consequences.

G09. **Revoke for Cause:** A step in the disciplinary process during which the certificate is no longer valid and requires successfully passing an exam to become certified. However, an exam will not be authorized until the revocation period expires. CEHs earned before or during this revocation period will not be counted for maintaining a credential.

G10. **Suspended:** Certificate status due to an insufficient number of CEHs being submitted prior to the expiration of a certificate. While in this state, a certificate holder cannot perform any task that requires an operator to be NERC certified.

G11. **Termination of Credential:** A step in the disciplinary process whereby a credential is permanently revoked.

G12. **Type of CEHs:** NERC-approved learning activity covering topics from **Appendix A,** NERC standards, and/or simulations for which there is a minimum requirement for credential maintenance.

# Appendix A: Recognized Operator Training Topics

Courses that provide CEHs for NERC Certification credential maintenance must relate to one or more specific recognized operator training topics, as they pertain to or support the BES reliability responsibilities of the system operator. Refer to the *NERC Credential Maintenance Program Administrative Manual* located on the One-Stop Shop[18] for more information about proper learning activity development.

1. **Basic Concepts**
    a. Basic ac/dc Electricity
        i. Capacitance
        ii. Inductance
        iii. Impedance
        iv. Real and reactive power
        v. Electrical circuits
        vi. Magnetism
    b. Basic Power System Mathematic Concepts
        i. Basic trigonometry
        ii. Ratios
        iii. Per unit values
        iv. Pythagorean Theorem
        v. Ohm's Law
        vi. Kirchhoff's Laws
    c. Characteristics of the BES
        i. Transmission lines
        ii. Transformers
        iii. Substations
        iv. Power plants
        v. Protection
        vi. Introduction to power system operations and interconnected operations
        vii. Frequency
        viii. Emerging technologies/equipment
2. **System Protection Principles**

[18] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

a. Transmission lines

b. Transformers

c. Busses

d. Generators

e. Relays and protection schemes

f. Power system faults

g. Synchronizing equipment

h. Under-frequency load shedding

i. Under-voltage load shedding

j. Communication systems utilized

**3. Interconnected Power System Operations**

a. Voltage control

b. Frequency control

c. Power system stability

d. Facility outage both planned and unplanned

e. Energy accounting

f. Inadvertent energy

g. Time error control

h. Balancing of load and resources

**4. Emergency Operations**

a. Loss of generation resource(s)

b. Loss of transmission element(s)

c. Operating reserves

d. Contingency reserves

e. Line loading relief

f. Load shedding

g. Voltage and reactive flows during emergencies

h. Loss of EMS

i. Loss of primary control center

**5. Power System Restoration**

a. Restoration philosophies

b. Facility restoration priorities

c. Blackstart restoration

d. Stability (angle and voltage)

e. Islanding and synchronizing

**6. Market Operations**

a. NAESB standards

b. Standards of conduct

c. Tariffs

d. OASIS applications (transmission reservations)

e. E-Tag application

f. Transaction scheduling

g. Market applications

h. Interchange

**7. Tools**

a. Supervisory Control and Data Acquisition (SCADA)

b. Automatic Generation Control (AGC) application

c. Power flow application

d. State estimator application

e. Contingency analysis application

f. P-V Curves

g. Load forecasting application

h. Energy accounting application

i. Voice and data communication systems

j. Demand-side management programs

**8. System Operator Situational Awareness**

a. Identifying loss of facilities

b. Recognizing loss of communication facilities

c. Recognizing telemetry problems

d. Recognizing and identifying contingency problems

e. Proper communications (three-part)

f. Communication with appropriate entities, including the Reliability Coordinator

g. Cyber and physical security and threats

h. Reducing system operator errors through the use of human performance tools, such as self-checking, peer checking, place keeping, and procedure use

**9. Policies and Procedures**

a. ISO/RTO operational and emergency policies and procedures

b. Regional operational and emergency policies and procedures

c. Company-specific operational and emergency policies and procedures

**10. NERC Reliability Standards**

Application and/or implementation of NERC Reliability Standards

# Appendix B: Program Manual Changes

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| 12/2023 | Examination Process | 3, 5 | Updated - Special Accommodations<br><br>Added - Confidentiality of Exams | 4.1 |
| | Deficits of CEHs for Credential Holders | 9 | Updated - Example and added SOCCED timezone. | |
| | Hardship Clause (NERC Rules of Procedure) | 11 | Updated - How Hardship Request Form should be submitted. | |
| | Appendix A Recognized Operator Training Topics | 19 | Updated - Appendix A Preamble | |
| See the Mapping Document for a detailed list of changes between the current and previous manual version. | | | | |
| 02/2022 | | All | Board Approved | 4.0 |
| See the Mapping Document for a detailed list of changes between the current and previous manual version. | | | | |
| 04/2020 | Certification Exams | 2 | Exam cut scores updated effective June 1, 2020 | 3.2 |
| 10/2019 | Preface | 1 | Updated NERC map and REs | 3.1 |
| 09/2017 | All Certification Examinations | All<br><br>1<br><br>All | Annual Review<br><br>Added additional information to clarify how the EWG is involved in the exam development process.<br><br>Added language to explain in more detail the exam development process. Matched language with test center vendor. Rearranged paragraphs for clarification.<br><br>Added exam development process diagram. | 3.0 |
| | Credential Maintenance | 2<br><br>All | Updated language for clarification. Reorganized paragraphs for consistency.<br><br>Added Certification Process Diagram. | |

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| | | 8 | | |
| 02/2017 | Introduction<br><br>Examinations<br><br>**Appendix A** | v<br><br>1<br><br>16, 18 | Added non-discriminatory statement<br><br>Updated Total Questions, Scored Questions, and Added Exam Cut Scores<br><br>Added overview statement for **Appendix A** Topics and adjusted number 8 of the topics. | 3.0 |
| 05/2016 | | All | Board Approved | 3.0 |
| 03/2016 | All | All<br><br>3<br><br>7 | Document reviewed to confirm accurate information.<br>Clarification of how 42-day wait period is calculated and 42-day wait period required regardless of exam failed.<br>Reduction of renewal request timeframe to 6 months prior to expiration. | 2.1 |
| 05/2014 | All | All | Updated to reflect new exam vendor information. Also, corrected certificate expiration date example to reflect actual process. | 2.1 |
| 02/2012 | All | | NERC address change<br>Style and format changes throughout<br>Eliminated detail instructions | 2.0 |
| 08/2010 | Executive Summary, II and III | 4, 16-23, 24, and 25 | Review of content for consistency with current requirements | 1.4 |
| 11/2009 | All | All | Fee increase for exams and credential maintenance | 1.3 |
| 10/2007 | II | 15 | Category defined for carry-over CE hours. | 1.3 |
| 08/2007 | All | All | Updated instructions to include instructions for the new database | 1.3 |
| 03/2007 | IV | 18 | General housekeeping and added a 45-day limit to Step 3 of DRP. Added comment about waiting for official score when available before taking action on a dispute filed with the PCGC chairman. | 1.2 |
| 03/2007 | I | 9 | Remove certificate numbering convention | 1.2 |

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| 08/2006 | III | 16 | Training providers retaining documentation | 1 |
| 06/2006 | All | All | CEH to CE Hours | 1.1 |
| 06/2006 | I and II | 4, 17 | Fees | 1.1 |
| 02/2006 | All | All | Program manual | 1 |
| 05/2005 | All | All | Initial white paper expanded SOC program to include CE hours | 0 |

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# System Operator Certification Program Manual

Approved by
NERC Board of Trustees
~~February 2022~~~~November 2023~~February 2024

RELIABILITY | RESILIENCE | SECURITY

3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

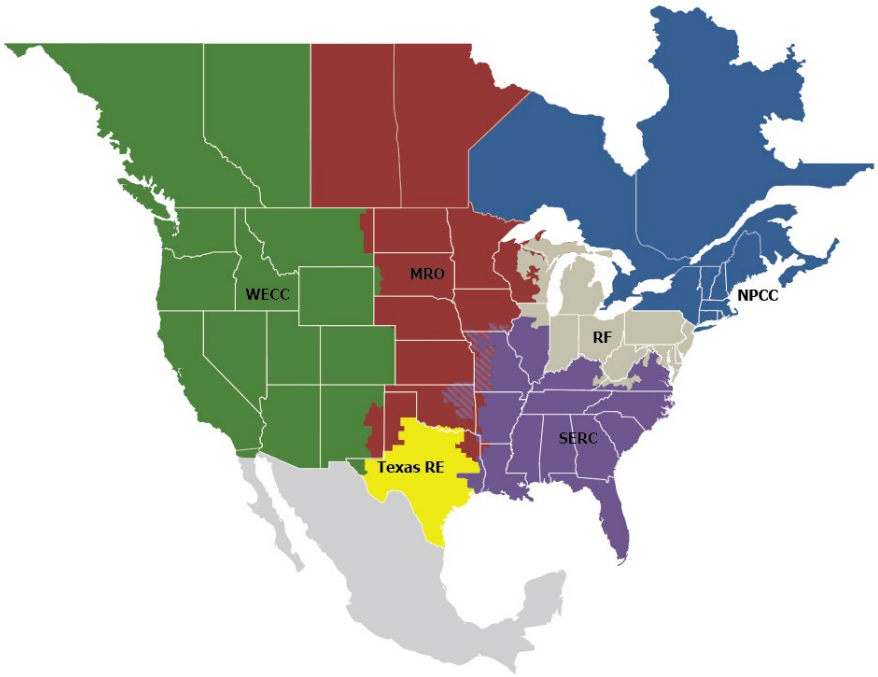
# Table of Contents

# Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ReliabilityFirst |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

# Introduction

The System Operator Certification Program promotes skilled and qualified system operators to ensure the reliability of the Bulk Electric System (BES).

NERC does not and shall not discriminate on the basis of age, gender, race, religion, national origin, disability, sexual orientation, or marital status in its implementation of the System Operator Certification Program.

The System Operator Certification Program provides the framework for operators to obtain initial certification in one of four NERC credentials: Reliability Coordinator Operator; Balancing, Interchange, and Transmission Operator; Transmission Operator; and Balancing and Interchange Operator. A system operator credential is a personal credential that NERC issues to a person for successfully passing a NERC System Operator Certification Exam. Each credential focuses on a specific functional area of system operations. Operators maintain each credential by accumulating a specified number of continuing education hours (CEH) within a specified period of time.

The NERC Credential Maintenance Program, as stated in the NERC Rules of Procedure,[1] provides a framework for the development and tracking of high-quality learning activities that qualify for CEHs.

The Credential Maintenance Working Group (CMWG) reports to the Personnel Certification Governance Committee (PCGC) and is responsible for overseeing the development and implementation of Credential Maintenance Program requirements under the general guidelines set by the PCGC.

The CMWG shall develop and update, as necessary, the *Credential Maintenance Program Administration Manual;*[2] this manual describes the following:

- Requirements for approving credential maintenance providers and structured learning activities
- Requirements for auditing credential maintenance providers and structured learning activities
- A multilayered review process for disputed application reviews, interpretations of guidelines and standards, probation or suspension of NERC-approved provider status, and CEH disputes
- Requirements on fees for credential maintenance providers and structured learning activities

The NERC PCGC is the governing body that establishes policies, sets fees, monitors the performance of the System Operator Certification Program, and ensures that the program is financially independent. NERC is the program administrator and maintains databases, records, applications, and contracts with vendors. NERC also collects fees, responds to inquiries, and provides reports on related system operator certification activities.

[1] https://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx
[2] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

# Chapter 1: Certification Examinations

## Overview

Through the System Operator Certification Program, NERC awards certification credentials to individuals who demonstrate that they have attained sufficient knowledge relating to NERC Reliability Standards as well as the basic principles of BPS operations by passing one of four examinations. NERC issues a certificate to the candidate who successfully completes an examination, and it remains valid for three years.

Members of the Exam Working Group (EWG) represent each of the areas tested in the examinations. The direct involvement of system operators, supervisors, and trainers in the examination development process is a primary requirement for NERC system operator certification examinations. The EWG develops the examinations under the guidance of a psychometric consultant. The EWG bases the examinations on content outlines developed through a job analysis. The EWG places each question in a "pilot" (not scored) position on the examination before using it in a "scored" position. Only questions that meet acceptable performance criteria can be placed in a scored position on an exam. The EWG continually tracks the performance of every question used in a scored position.

## Examinations

There are four examinations:

- Reliability Coordinator Operator
- Balancing, Interchange, and Transmission Operator
- Transmission Operator
- Balancing and Interchange Operator

These computer-based exams consist of questions with multiple-choice answers. The content outlines can be accessed from the System Operator Certification and Credential Maintenance Program.[3] The PCGC approves the passing score for each new published exam, and the score can be found on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[4] web page with exam resources.

The number of correct responses required to pass (cut score) is set by a panel of practitioners using a rigorous standard setting methodology. This methodology requires subject matter experts to establish a definition of minimum acceptable competence for each examination and conduct an evaluation of each examination question in order to set the minimum level of performance necessary on each examination to demonstrate competence (**Table 1.1**).

**Table 1.1: System Operator Examinations**

| Examination Title | Designation | Total Questions | Scored Questions | Cut Score* |
|---|---|---|---|---|
| Reliability Coordinator Operator | RC | 140 | 120 | 92 |
| Balancing, Interchange, and Transmission Operator | BT | 140 | 120 | 92 |
| Transmission Operator | TO | 120 | 100 | 76 |
| Balancing and Interchange Operator | BI | 120 | 100 | 76 |

[3] http://www.nerc.com/pa/Train/SysOpCert/Pages/default.aspx
[4] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

*Effective June 1, 2020

Each candidate's examination is developed to be equal in difficulty level to other candidates' examinations to ensure that a fair and consistent standard is applied to each candidate. To this end, each examination consists of scored examination questions that have been administered to candidates and have acceptable statistical characteristics.

## Examination Process

### Examination Application Process

Candidates must create an account (see **Figure 1.1**) in the System Operator Certification and Continuing Education Database[5] (SOCCED) in order to register and pay for an exam. After the candidate has paid for the exam, SOCCED will send the candidate exam information to the exam vendor, PSI. PSI will send the candidate an email with the information needed to schedule their exam.

Once paid for, the exam application is valid for one year after the issuance date and can only be used once. If a candidate fails to schedule and sit for the exam within the one-year eligibility period, the candidate shall forfeit the exam fee to NERC.

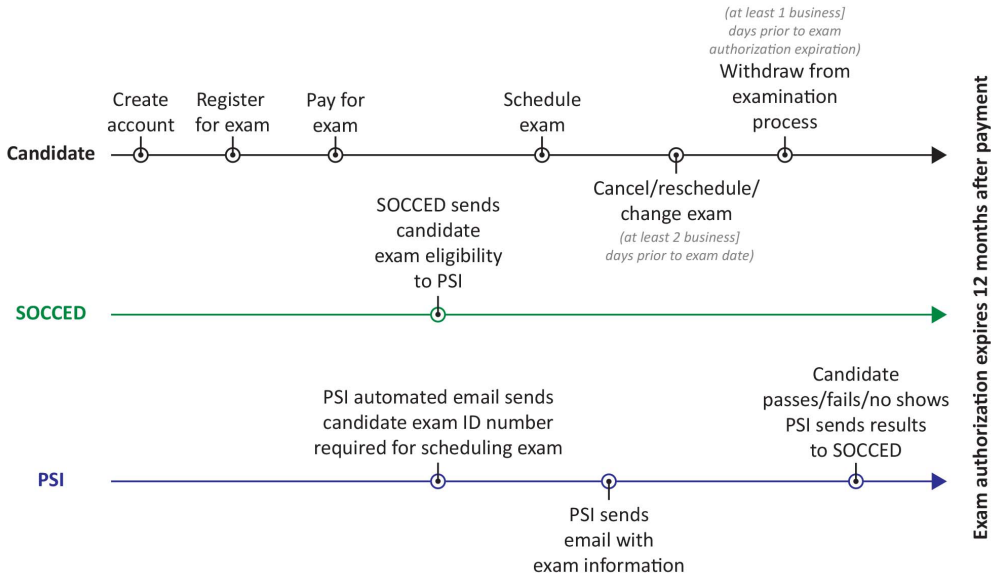



**Figure 1.1: NERC Certification Process Flowchart**

### Scheduling an Examination Appointment

After the candidates received the email notification from PSI, the candidate can schedule an appointment for testing, using PSI's website.[6] Candidates should follow the instructions for scheduling an exam that are sent from PSI. Examination appointments are subject to the availability of each test center.

[5] https://nerc-socced.useclarus.com/
[6] https://schedule.psiexams.com/

**Note:** When a candidate schedules a test date, PSI will issue the candidate a confirmation number. Candidates should retain this number. It is required for check-in, for PSI's automated cancellation system, or if there is a conflict with the test center appointment. FAQs and the Candidate Information Bulletin are on the PSI website.

### Canceling and Rescheduling Examination Appointments

Candidates may cancel and reschedule examination appointments without forfeiting the examination fee if the cancellation notice is provided to PSI by close of business time of that test center at least two business days prior to the scheduled exam appointment time. Examination fees are nonrefundable and nontransferable.

To cancel or reschedule exam appointments, visit PSI's website or call PSI at 800-733-9267 and speak to a PSI customer service representative. A voice mail message is not an acceptable form of cancellation.

### Examination Type Change Request

Candidates may change the examination type they previously registered for by using the SOCCED within the existing exam eligibility period. Candidates should also notify NERC by submitting a request[7] via the SOCCED Help Center. When PSI receives the examination change, they will send the candidate an email with updated exam information. After candidates receive their new exam information from PSI, they must schedule/reschedule an appointment with PSI to take the exam. Notification must be received by PSI no later than close of business time of that test center at least two business days prior to the scheduled exam appointment for making this change or for submitting any additional change.

### Withdrawal from Examination Process

The eligibility period lasts until one year after the date the candidate pays for the exam. If a candidate wishes to withdraw from the process within the one-year period for any reason, the candidate must request a withdrawal by close of business the day before the last eligibility day by submitting a request via the SOCCED Help Center. Candidates who submit the request within the time period will be reimbursed for the fees submitted to NERC except the withdrawal fee. The candidate will forfeit all submitted fees if the candidate fails to properly withdraw.

**Note:** If a candidate has already scheduled an appointment with PSI to take the exam, the candidate must cancel that appointment with PSI or forfeit the exam fee.

### Special Accommodations ~~for Disabilities~~Requests

Requests submitted for special accommodations covered by a recognized disability, will be reviewed by NERC Staff. ~~NERC will make allowances for all documented requests for special testing conditions~~ . Requests must be supported by the Special Accommodation Request Form and a letter from a recognized health care provider, signed by a health professional. NERC will review each request and provide appropriate Special Accommodations, if warranted. The decision will be included in the notice of eligibility approval/denial sent to the applicant.

When making requests for Special Accommodations, ~~A~~applicants must notify the NERC Manager of Personnel Certification and Credential Maintenance ~~personnel certification manager~~ by submitting a ticket to the SOCCED Help Center ~~by email~~ at least ~~two~~ four (4) weeks prior to the scheduled exam appointment.

**Note:** It will take the exam vendor 7 – 10 business days to accommodate an approved request. If the candidate already has their exam schedule they will need to take this into consideration. Special accommodatons may impact the availability of testing locations.

[7] https://soccedsupport.zendesk.com/hc/en-us/requests/new

~~Disability requests must be supported by an original letter from a recognized health care provider and be signed by a health professional. NERC will review each request and provide appropriate accommodations. The decision will be included in the notice of eligibility/registration approval sent to the applicant.~~

### Taking the Exam

Candidates should arrive and be inside the testing center at least 30 minutes prior to the examination start time for the Administration and Review of Candidate Identification and should allocate at least a total of four hours to accommodate the testing process (**Table 1.2**).

Candidates must show two current valid forms of identification to be admitted into the examination: one primary form of identification and either another primary or a secondary form of identification:

- Primary identification is a government-issued form of identification and must have both your picture and your signature on it. Examples of primary identification are a driver's license, a government issued identification card, a passport, a temporary visa, or a military ID.
- Secondary identification must have a name and either your picture or your signature or both. Acceptable forms of secondary IDs are an employment ID, credit card, or debit card.

The PSI testing center will not accept altered, expired, or damaged identifications. If there is any discrepancy between the name on the candidate's identification and the NERC registration, the testing center will not allow that candidate to test.

**Table 1.2: Examination Time Allocation**

| Examination Stages | Time Allocation |
|---|---|
| Administration and Review of Candidate Identification | 30 minutes |
| Computer-Based Tutorial | 15 minutes |
| Examination | 3 hours |
| Post-Examination Survey | 15 minutes |
| **Total Time to be Allocated** | **4 hours** |

### Testing Center Regulations

- Depending on the established criteria at the testing center, candidates who arrive late may not be allowed to sit for the examination. Late arrivals that are not permitted to take the examination will be considered no-shows and must reapply and pay the full test fee to take the examination.
- Candidates cannot bring reference materials, calculators, cell phones, or recording equipment into the examination. Some testing centers may not have lockers to accommodate personal items. Do not bring personal items, besides your appropriate ID, into the test center.
- No test materials, documents, notes, or scratch paper of any sort may be taken from the examination (pencils, paper, and an online calculator will be provided).
- Visitors are not permitted during the examination.
- Testing center staff can only answer questions about testing procedures; they cannot respond to inquiries regarding the examination's content.

- During the examination, candidates may use the restrooms; however, the examination clock will continue running during that time.
- Candidates may not leave the testing center until they have finished the exam.
- Smoking is not permitted in the testing center.
- Any candidate giving assistance, receiving assistance, or making a disturbance will be required to turn in their examination materials, exit the examination room, and leave the testing center. The Disciplinary Action Procedure will be initiated upon notification to NERC that the incident occurred.
- Any instances of cheating or attempts to impersonate another candidate will be dealt with through the Disciplinary Action Procedure.
- If the testing center regulations differ from what is noted above, the testing center regulations should be followed.

**Note:** All no-shows will have to reapply and pay the full test fee to take the examination.

### Results of Exam

A pass/fail score report will be given at the end of exam. The PSI testing center will provide a summary of the examination before a candidate leaves.

Candidates who pass the examination will receive the appropriate NERC-certified system operator certificate signed by the NERC CEO. The date on the certificate will be the date the candidate passed the examination.

### Confidentiality of Exam Questions

The exam questions are the sole property of NERC and are confidential. Candidates are prohibited from downloading, taking screens shot of, or otherwise copying the exam questions in any format. Distributing, transferring, selling or otherwise sharing or publicly posting exam questions is strictly prohibited. Candidates that engage is such activity will have their credentials revoked and may be subject to other consequences as the law permits.

### Time between Examinations

Candidates who fail an exam must wait 42 calendar days from the date of the failed examination to sit for any of the four NERC credential exams. Candidates who pass one of the NERC system operator certification examinations may not take that exam again unless their credential has expired. SOCCED automatically sets a credential to expire four years from exam pass date if the credential maintenance requirements are not met.

### Confirmation of Credential to Third Parties

NERC will confirm to an employer that an individual holds a valid NERC system operator certificate and will release the certificate number and issuance date in response to a written request.

NERC will release the certificate numbers and issuance dates for individuals holding a current NERC system operator certificate to the regional compliance staff or designated agents of registered entities in which an individual's employer operates in response to a written request.

NERC will confirm to an employment search firm or a potential employer whether an individual holds a valid NERC system operator certificate, including releasing the certificate number and the issuance date, if the search firm or potential employer has a release from the individual.

# Chapter 2: Credential Maintenance

## Overview

The System Operator Certification Program includes a requirement to maintain certification by obtaining CEHs. Successfully passing an examination earns candidates a credential and a certificate that is valid for three years. NERC requires certified system operators to accumulate CEHs through the NERC Credential Maintenance Program in recognized operator training topics, as listed in **Appendix A** for credential maintenance. To maintain a valid credential, candidates must accumulate the proper number and type of CEHs from NERC-approved learning activities within a three-year period. The system operator must meet the requirements and pay for their renewal in SOCCED. Upon transcript review and approval, NERC will issue a new certificate with the new expiration date.

### Program Requirement Summary

1. System operators seeking to obtain a credential must pass an examination.
2. NERC will issue a certificate that is valid for three years to successful candidates.
3. To maintain a valid certification, a system operator must earn CEHs within the three-year period preceding the expiration date of their certificate as specified by their credential in **Table 2.1** and adhering to the timeline in **Figure 2.1**. The CEHs must include the following:
    a. A minimum of 30 CEHs that focus on content and/or implementation of NERC standards.
    b. A minimum of 30 CEHs that utilize simulations (i.e., tabletop exercises, operator training simulators, emergency drills or practice of emergency procedures, restoration, blackstart, or other reliability-based scenarios).

**Note**: Reference the *Credential Maintenance Program Administrative Manual*[8] for additional information.

**Table 2.1: Credential Maintenance Requirements**

| Certification | Designation | Total CEH Requirement | NERC Standard CEH Requirement | Simulation CEH Requirement |
|---|---|---|---|---|
| Reliability Coordinator Operator | RA, RC | 200 | 30 | 30 |
| Balancing, Interchange, and Transmission | BT | 160 | 30 | 30 |
| Transmission Operator | TO | 140 | 30 | 30 |
| Balancing and Interchange | BI | 140 | 30 | 30 |

[8] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

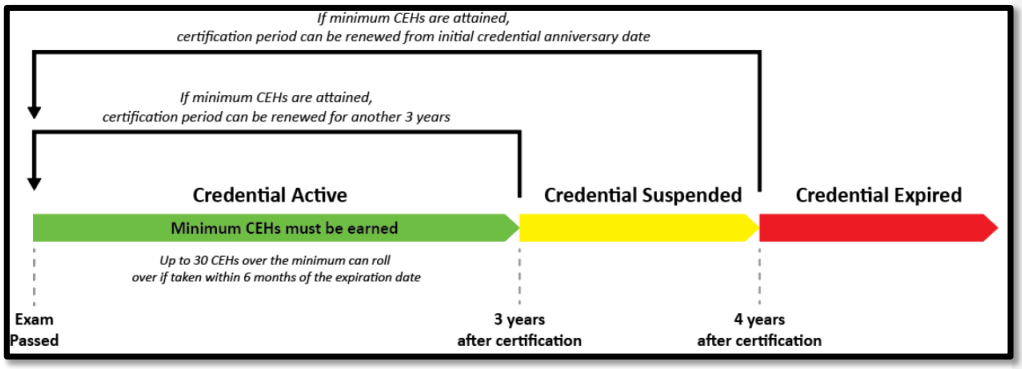



**Figure 2.1: NERC Credential Maintenance Process Flor**

4. System operators satisfying the credential maintenance requirements must submit a renewal request for their credential and pay the renewal fees through the SOCCED.
5. The NERC system operator credential can be maintained only by earning the appropriate number and type of CEHs.
6. Certified system operators that do not accumulate enough CEHs to maintain their current credential prior to the certificate expiration date will have their credential suspended for a maximum of one year.
7. If the appropriate number of CEHs have not been obtained at the end of the suspension period, the credential will expire**.**
8. Certified system operators can accumulate the proper number and type of CEHs during the suspension period and have their credential reinstated with the original expiration date (three years after the previous expiration date).

**Note:** See **Chapter 7: Glossary**.

> CEHs can concurrently count for the total number required, the NERC standards required, and the simulations but will only be counted once for the total CEHs requirement.
>
> For example: A three-hour learning activity that includes one hour of instruction and a two-hour simulation on the implementation of NERC standards will be counted as three hours toward the total requirement, two hours toward the standards requirement, and two hours toward the simulation requirement.

9. System operators with expired credentials will have to pass an examination to become recertified.

### Deficits of CEHs for Credential Holders

A system operator who does not accumulate the required CEHs within the three-year period will have their credential suspended. The system operator with a suspended certificate may not perform any task that requires an operator to be NERC certified. The system operator with a suspended credential will have up to 12 months to acquire the necessary CEHs. The original anniversary date (three years after the previous expiration date) does

not change. The system operator will still need to accumulate the required number of CEHs prior to the next expiration date. NERC will maintain a record of the suspension.

SOCCED maintains the record of expiration in the Eastern Time Zone.

For example:

A system operator whose credential expires July 31, ~~2014~~2024, and who does not accumulate the required number of hours prior to that date, will have their credential suspended on July 31, ~~2014~~2024, ~~00~~23:~~00~~59.

If the system operator accumulates and submits the required number of hours on March 1, ~~2015~~2025, the credential will be reinstated and will be valid until July 31, ~~2017~~2027, which is three-years from the original expiration date of July 31, 2024.~~.~~

The system operator will then have to accumulate the required number of hours prior to July 31, ~~2017~~2027, ~~00~~23:~~00~~ 59 or the credential will be suspended again.

CEHs previously used for credential maintenance cannot be reused.

If the system operator does not accumulate the required number of CEHs at the end of a 12-month suspension period, the credential will expire and the system operator will forfeit all CEHs earned. After a credential expires, the system operator must pass an examination to become recertified.

### Rollover Hours

For all credentials, some CEHs may be carried over to the next certification period. Up to 30 CEHs accumulated in the six months prior to the certificate expiration date that are not used for credential maintenance or change of credential type may be carried over. Categorization of CEHs in the "standards" category or the "simulation" category will not be carried over into the next period. To satisfy the CEH requirement, CEHs will be used starting with the first learning activity that occurred, according to the calendar, then sequentially by the date of the learning activities. See **Figure 2.2** for an example of rollover hours.

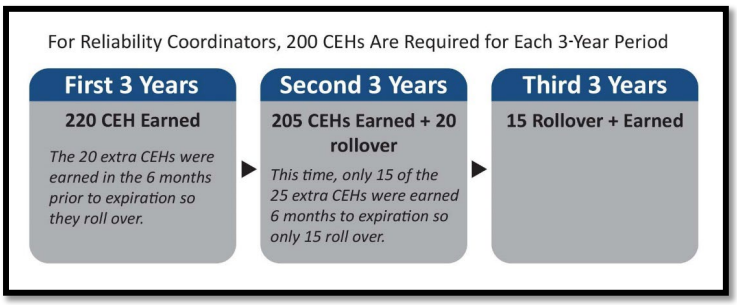



**Figure 2.2: Certification Periods for Reliability Coordinator Credential (200 CEHs Required)**

### NERC Continuing Education Providers

NERC continuing education (CE) providers report the CEHs earned by each certified system operator to NERC electronically through the SOCCED. Providers are also required to provide the certified system operator proof of having earned the CEHs.

### System Operator

System operators are able to track their status toward maintaining their credential through the NERC SOCCED. Certified system operators should review their transcripts at least 90 days up to 6 months before their certificate expiration date to allow sufficient time to acquire CEHs should there be a conflict. If a conflict occurs, the certified system operator shall submit proof of having acquired the necessary CEHs from the Credential Maintenance Program's approved learning activities to the NERC manager of personnel certification and credential maintenance. The system operator must submit at least 30 days before the certificate expiration date to allow NERC staff time to process and resolve discrepancies and prevent the credential from being suspended. NERC will reinstate suspended credentials once proof of completion is verified.

System operators who meet the CEH requirements must pay for their renewal through SOCCED. The system operator may print a new certificate from SOCCED. The new certificate will have an expiration date that is three years from the previous expiration date. Renewal requests should be submitted no more than six months prior to expiration date.

### Changing Certification Levels

A certified system operator who wants to change to a different credential that requires fewer CEHs may do so when they meet the proper number and type of hours for the new credential. A certified system operator can change their credential type by indicating the desire to do so in SOCCED when requested to renew.

See the following to change a credential:

- **Reliability Coordinator Operator (RC) to any other NERC credential**: a system operator who has obtained the proper number and type of hours for the new credential may renew to any NERC system operator credential.
- **Balancing, Interchange, and Transmission Operator (BT) to Transmission Operator (TO) or Balancing and Interchange Operator (BI)**: a system operator will have the option to renew to a TO or BI credential when the proper number and type of hours for the new credential have been obtained.
- **Balancing, Interchange, and Transmission Operator (BT) to Reliability Coordinator Operator (RC)**: a system operator must pass the examination for the Reliability Operator credential.
- **Balancing and Interchange Operator (BI) to any other NERC credential**: a system operator must pass the examination for that credential.
- **Transmission Operator (TO) to any other NERC credential**: a system operator must pass the examination for that credential.

# Chapter 3: Hardship Clause (NERC Rules of Procedure)

Hardship is when unforeseen events and extenuating circumstances occur that place excessive burden on a system operator to earn or maintain a credential. To initiate the hardship clause process, the system operator must submit complete the Hardship Request Form[9] located on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[10] page.

The completed Hardship Request Form should be submitted via the SOCCED Help Center[11] ~~provided to the following:~~ Attention: Manager Personnel Certification and Credential Maintenance.

~~NERC Personnel Certification and Credential Maintenance Manager~~
~~3353 Peachtree Road NE, Suite 600, North Tower~~
~~Atlanta, GA 30326~~

~~Or Submit a Request[12] via the SOCCED Help Center to obtain the email address of the manager of Personnel Certification and Credential Maintenance.~~

Following the PCGC's process, the Personnel Certification and Credential Maintenance manager will provide the hardship request to the PCGC's Hardship and Dispute Resolution Task Force (HDRTF) for review. The HDRTF makes the determination on approval or rejection of the request.

The PCGC retains the right to invoke the hardship clause and deviate from the program rules as it deems appropriate to address such events or circumstances. Examples of extenuating circumstances include (but are not limited to) military service or an illness/disability of the system operator or within the system operator's immediate family that results in an extended period of time away from work.

[9] https://www.nerc.com/pa/Train/SysOpCert/System%20Operator%20Certification%20DL/SOC_Hardship_Request_Form.pdf
[10] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx
[11] ~~SOCCED HELP CENTER (zendesk.com)~~https://soccedsupport.zendesk.com/hc/en-us
[12] ~~https://soccedsupport.zendesk.com/hc/en-us/requests/new~~

Field Code Changed

# Chapter 4: Program Rules

## Overview

NERC will recognize CEHs for credential maintenance only from operator training topics and learning activities listed in **Appendix A** and if providers have complied with the Credential Maintenance Program[13] rules. See the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[14] for the *Credential Maintenace Program Administrative Manual* and other references.

## Learning Activities

- **Emergency Operations Training Topics**

  CEHs for emergency operations will be recognized for credential maintenance twice a year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary). CE courses can count as emergency operations courses if the training is related to emergency preparedness, operational communications and situational awareness, analysis and troubleshooting, or the response to any emergency as defined by NERC: Any abnormal system condition that requires automatic or immediate manual action to prevent or limit the failure of transmission facilities or generation supply that could adversely affect the reliability of the BES.

- **Other Training Topics**

  NERC will recognize CEHs for a particular course or learning activity—other than emergency operations training—for credential maintenance once a year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary).

- **Instructor Training**

  For instructors who are also certified system operators, NERC will recognize 1.0 CEH for each CEH of a learning activity delivered toward the instructor's system operator credential maintenance. Emergency operations topics can be counted twice per year based on the credential anniversary (i.e., during the 12-month period preceding the system operator's credential anniversary).

- **Proof of Course Completion**

  A certified system operator is responsible for retaining appropriate documentation for proof of credential maintenance. Documentation includes the following:

  - The learning activity's title and identification number
  - The date(s) of the learning activity
  - The number and type of CEHs
  - The system operator's NERC certificate number

Training providers shall retain comparable documentation. Electronic forms of documentation are acceptable.

### Learning Activity Status Changes

NERC will grant CEHs for a course or learning activity approved for credential maintenance. If a system operator attends an approved learning activity that is later revoked or expired, NERC will still recognize CEHs from that activity while it was approved.

[13] https://www.nerc.com/pa/Train/SysOpCert/Pages/default.aspx
[14] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

## Disputes between Certified System Operators and Providers

If there is a dispute between a provider and a certified system operator, the parties must resolve the dispute without involvement from NERC. Additionally, it is the obligation of certified system operators to periodically review their CEH records in the NERC SOCCED and maintain their own training records to provide proof of achieving CEH requirements.

## Fees

NERC uses fees for the ongoing expense to develop and maintain the certification program. The fees also cover the expense of the management and administrative costs associated with the examination process and credential maintenance. The PCGC periodically reviews and adjusts these fees. NERC posts these fees on the One-Stop Shop (System Operators Certification and Credential Maintenance Program)[15] page.

## Legal Name Changes

If a system operator changes their legal name, the system operator must submit a written request containing an explanation of the circumstance and copies of the legal documentation of the name change to the following:

NERC Personnel Certification and Credential Maintenance Manager
3353 Peachtree Road NE, Suite 600, North Tower
Atlanta, GA 30326

Or submit a request[16] via the SOCCED Help Center

[15] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx
[16] https://soccedsupport.zendesk.com/hc/en-us/requests/new

# Chapter 5: Dispute Resolution (NERC Rules of Procedure)

## Overview

Any dispute arising under the NERC agreement that established the NERC System Operator Certification Program or from the establishment of any NERC rules, policies, or procedures that deal with any segment of the certification process or as a result of disciplinary action shall be subject to the NERC System Operator Certification Dispute Resolution Process. The Dispute Resolution Process is for the use of individuals who hold a NERC system operator certification or individuals wishing to be certified to dispute the validity of the examination, the content of the test, the content outlines, or the registration process.

## Dispute Resolution Process

1. **NERC System Operator Certification Program Staff**

   The first step in the process is for the person with a dispute to contact the NERC System Operator Certification Program staff. This can be done by Submit a Request[17] via the SOCCED Help Center. This first step can usually resolve the issue, and if it does, no further action is needed. If the issue is not resolved, the issue can be brought to the PCGC Dispute Resolution Task Force.

1. **Personnel Certification Governance Committee Dispute Resolution Task Force**

   If NERC staff did not resolve the issue to the satisfaction of the parties involved, a written request must be submitted to the chairperson of the PCGC through NERC staff within 45 days of the conversation with NERC staff explaining the issue(s) and requesting further action. Upon receipt of the letter, the PCGC chairperson will present the request to the PCGC Dispute Resolution Task Force for action. This task force consists of three current members of the PCGC. The PCGC Dispute Resolution Task Force will investigate and consider the issue presented and make a decision. This decision will then be communicated to the submitting party, the PCGC chairperson, and NERC staff within 45 calendar days of receipt of the request.

   If a French-Canadian or Mexican party raises a dispute, the PCGC shall appoint a French-Canadian interpreter or a Spanish interpreter as requested.

2. **Personnel Certification Governance Committee**

   If the PCGC Dispute Resolution Task Force's decision did not resolve the issue(s) to the satisfaction of the parties involved, the final step in the process is for the issue(s) to be brought before the PCGC. Within 45 days of the date of the task force's decision, the disputing party shall submit a written request to the PCGC chairperson through NERC staff requesting that the issue(s) be brought before the PCGC for resolution. The chairperson shall see that the necessary documents and related data are provided to the PCGC members as soon as practical. The PCGC will then discuss the issue(s) and make their decision within 60 calendar days of the chairperson's receipt of the request. The decision will be provided to the person bringing the issue(s) and the NERC staff. The PCGC is the governing body of the certification program, and its decision on all disputes is final.

### Process Expenses

All individual expenses associated with the process, including salaries, meetings, and consultant fees shall be the responsibility of the individual parties incurring the expense.

[17] https://soccedsupport.zendesk.com/hc/en-us/requests/new

## Decision Process

*Robert's Rules of Order* shall be used as a standard of conduct for the process. A majority vote of the members present will decide all issues. The vote will be taken in a closed session. No member of the PCGC may participate in the dispute resolution process other than the party or a witness that has an interest in the particular matter.

A stipulation of invoking the appeals process is that the party requesting the appeal agrees that neither NERC (its members, Board of Trustees, committees, subcommittees, and staff), any person assisting in the appeals process, nor any company employing a person assisting in the appeals process, shall be liable, and they shall be held harmless against the consequences of any action or inaction as well as harmless against any agreement reached in resolution of the dispute or any failure to reach agreement as a result of the appeals proceeding. This "hold harmless" clause[18] does not extend to matters constituting gross negligence, intentional misconduct, or a breach of confidentiality.

[18] NERC Rules of Procedure; Section 5.1

# Chapter 6: Disciplinary Actions (NERC Rules of Procedure)

## Overview

This Disciplinary Action Procedure is necessary to protect the integrity of the system operator credentials. Should an individual act in a manner that is inconsistent with expectations, this procedure describes the process to investigate and take action necessary to protect the credential.

## Grounds for Action

The following shall serve as grounds for disciplinary action:

- Willful violation and/or a gross violation of the NERC standards as determined by a NERC investigation
    - Both the organization and the certified system operator are bound by the NERC Reliability Standards. If a certified system operator, either in concert with the organization or on their own initiative, performs a willful violation and/or a gross violation of the NERC standards the organization and the certified system operator are both liable for those actions and disciplinary actions may be taken against them.
- Willful negligence and/or a gross negligence in performing the duties of a certified system operator as determined by a NERC investigation
- Intentional misrepresentation of information provided to NERC for a system operator certification exam or to maintain a system operator credential using CEHs
- Intentional misrepresentation of identification in the exam process, including an individual identifying as another person to obtain certification for the other person
- Any form of cheating during a certification exam that includes, but is not limited to, bringing unauthorized reference material in the form of notes or other materials into the testing center
- A certified system operator's admission to or conviction of any felony or misdemeanor directly related to their duties as a system operator
- Creating a second account in SOCCED in order to register and pay for an exam under a different login and/or account name in order to bypass the 42 day wait period between examinations

## Hearing Process

Upon the report to NERC of a candidate's or certified system operator's alleged misconduct, the PCGC Credential Review Task Force will convene for the determination of facts. An individual, government agency, or other investigating authority may file a report. Unless the task force initially determines that the report of alleged misconduct is without merit, the candidate or certified system operator will be given the right to receive notice of the allegation. A hearing will be held and the charged candidate or certified system operator will be given an opportunity to be heard and present further relevant information. The task force may seek out information from other involved parties. The hearing will not be open to the public, but it will be open to the charged candidate or the certified system operator and their representative. The task force will deliberate in a closed session, but the task force cannot receive any evidence during the closed session that was not developed during the course of the hearing.

## Task Force's Decision

The task force's decision will be unanimous and will be in writing with inclusion of the facts and reasons for the decision. The task force's written decision will be delivered to the PCGC (via email) and to the charged candidate or the certified system operator. In the event that the task force is unable to reach a unanimous decision, the matter shall be brought to the full committee for one of the following decisions:

- **No Action:** The allegation of misconduct was determined to be unsubstantiated or inconsequential to the credential.
- **Probation:** NERC will send a letter to the offender specifying the length of probationary period (to be determined by the PCGC).
  - The Credential will remain valid during the probationary period.
  - The probationary period does not affect the expiration date of the current certificate.
  - During the probationary period, a subsequent offense of misconduct, as determined through the same process described above, may be cause for more serious consequences.
- **Revoke for Cause:** NERC will send a letter to the offender specifying the length of the revocation period (to be determined by the PCGC).
  - Credential is no longer valid.
  - Offender must successfully pass an exam to become recertified.
  - An exam will not be authorized until the revocation period expires.
- **Termination of Credential:** NERC will send a letter to the offender specifying permanent revocation of credential, and the offender will not be approved to sit for a future examination.

## Credential Review Task Force

A Credential Review Task Force shall be comprised of three active members of the PCGC assigned by the chairperson of the PCGC on an ad hoc basis. No one on the credential review task force may have an interest in the particular matter. The task force will meet in a venue determined by the task force chairperson.

If a French-Canadian or Mexican party raises a dispute, the PCGC shall appoint a French-Canadian interpreter or a Spanish interpreter as requested.

## Appeal Process

The decision of the task force may be appealed using the NERC System Operator Certification Dispute Resolution process (see **Chapter 4:**).

# Chapter 7: Glossary

G01. **Continuing Education Hour (CEH):** Based on 60 clock minutes and includes at least 50 minutes of participation in a group or self-study learning activity that meets the criteria of the NERC Credential Maintenance Program.

G02. **Continuing Education (CE) Provider**: The individual or organization responsible for setting learning objectives, developing the curriculum to achieve such objectives, offering a learning activity to participants, and maintaining documentation required by these criteria. The term CE Provider may include NERC, REs, operating and marketing entities, technical and industry societies and associations (whether formal or informal), consultants, vendors, colleges, universities, and training companies as well as employers who offer in-house learning activities.

G03. **Certification:** An official recognition that indicates the recipient has passed a NERC exam or completed a specified number of CEHs.

G04. **Credential:** NERC designation that indicates the level of qualification achieved (i.e., Reliability Operator; Balancing, Interchange, and Transmission Operator; Balancing and Interchange Operator; and Transmission Operator).

G05. **Credential Maintenance:** Meet NERC CEH requirements to maintain a valid NERC-issued system operator credential.

G06. **Expired:** A NERC certificate that has been suspended for more than 12 months. While in this state, a certificate holder cannot perform any task that requires an operator to be NERC certified. The certificate holder will be required to pass an exam to be certified again. Any CEHs accumulated prior to or during the expiration period will not be counted toward certificate maintenance.

G07. **NERC-Approved Learning Activity**: Training that maintains or improves professional competence and has been approved by NERC for use in its Credential Maintenance Program.

G08. **Probation:** A step in the disciplinary process during which the certificate is still valid. During the probationary period, a subsequent offense of misconduct, as determined through the same process as described above, may be cause for more serious consequences.

G09. **Revoke for Cause:** A step in the disciplinary process during which the certificate is no longer valid and requires successfully passing an exam to become certified. However, an exam will not be authorized until the revocation period expires. CEHs earned before or during this revocation period will not be counted for maintaining a credential.

G10. **Suspended:** Certificate status due to an insufficient number of CEHs being submitted prior to the expiration of a certificate. While in this state, a certificate holder cannot perform any task that requires an operator to be NERC certified.

G11. **Termination of Credential:** A step in the disciplinary process whereby a credential is permanently revoked.

G12. **Type of CEHs:** NERC-approved learning activity covering topics from **Appendix A,** NERC standards, and/or simulations for which there is a minimum requirement for credential maintenance.

# Appendix A: Recognized Operator Training Topics

Courses that provide CEHs for ~~the purpose of~~ NERC Certification credential maintenance ~~shall be based on~~ must relate to one or more specific recognized operator training topics, as they pertain to or ~~listed below. Learning objectives must specifically~~ support the BES reliability responsibilities of the system operator. ~~and/or specific recognized operator training topics.~~ Refer to the *NERC Credential Maintenance Program Administrative Manual* located on the One-Stop Shop[19] for more information about proper learning activity development.

1. **Basic Concepts**
    a. Basic ac/dc Electricity
        i. Capacitance
        ii. Inductance
        iii. Impedance
        iv. Real and reactive power
        v. Electrical circuits
        vi. Magnetism
    b. Basic Power System Mathematic Concepts
        i. Basic trigonometry
        ii. Ratios
        iii. Per unit values
        iv. Pythagorean Theorem
        v. Ohm's Law
        vi. Kirchhoff's Laws
    c. Characteristics of the BES
        i. Transmission lines
        ii. Transformers
        iii. Substations
        iv. Power plants
        v. Protection
        vi. Introduction to power system operations and interconnected operations
        vii. Frequency
        viii. Emerging technologies/equipment

[19] https://www.nerc.com/pa/Train/SysOpCert/Pages/SOOneStopShop.aspx

**2. System Protection Principles**

a. Transmission lines

b. Transformers

c. Busses

d. Generators

e. Relays and protection schemes

f. Power system faults

g. Synchronizing equipment

h. Under-frequency load shedding

i. Under-voltage load shedding

j. Communication systems utilized

**3. Interconnected Power System Operations**

a. Voltage control

b. Frequency control

c. Power system stability

d. Facility outage both planned and unplanned

e. Energy accounting

f. Inadvertent energy

g. Time error control

h. Balancing of load and resources

**4. Emergency Operations**

a. Loss of generation resource(s)

b. Loss of transmission element(s)

c. Operating reserves

d. Contingency reserves

e. Line loading relief

f. Load shedding

g. Voltage and reactive flows during emergencies

h. Loss of EMS

i. Loss of primary control center

5. **Power System Restoration**
    a. Restoration philosophies
    b. Facility restoration priorities
    c. Blackstart restoration
    d. Stability (angle and voltage)
    e. Islanding and synchronizing
6. **Market Operations**
    a. NAESB standards
    b. Standards of conduct
    c. Tariffs
    d. OASIS applications (transmission reservations)
    e. E-Tag application
    f. Transaction scheduling
    g. Market applications
    h. Interchange
7. **Tools**
    a. Supervisory Control and Data Acquisition (SCADA)
    b. Automatic Generation Control (AGC) application
    c. Power flow application
    d. State estimator application
    e. Contingency analysis application
    f. P-V Curves
    g. Load forecasting application
    h. Energy accounting application
    i. Voice and data communication systems
    j. Demand-side management programs
8. **System Operator Situational Awareness**
    a. Identifying loss of facilities
    b. Recognizing loss of communication facilities
    c. Recognizing telemetry problems

d. Recognizing and identifying contingency problems

e. Proper communications (three-part)

f. Communication with appropriate entities, including the Reliability Coordinator

g. Cyber and physical security and threats

h. Reducing system operator errors through the use of human performance tools, such as self-checking, peer checking, place keeping, and procedure use

**9. Policies and Procedures**

a. ISO/RTO operational and emergency policies and procedures

b. Regional operational and emergency policies and procedures

c. Company-specific operational and emergency policies and procedures

**10. NERC Reliability Standards**

Application and/or implementation of NERC Reliability Standards subject to current or future enforcement

## Appendix B: Program Manual Changes

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| ~~11~~02/2024~~3~~ | Examination Process | 3, 5 | Updated - Special Accommodations<br><br>Added - Confidentiality of Exams | 4.1 |
| | Deficits of CEHs for Credential Holders | 9 | Updated - Example and added SOCCED timezone. | |
| | Hardship Clause (NERC Rules of Procedure) | 11 | Updated - How Hardship Request Form should be submitted. | |
| | Appendix A Recognized Operator Training Topics | 19<br><br>21 | Updated - Appendix A Preamble<br><br>10.NERC Reliability Standards | |
| See the Mapping Document for a detailed list of changes between the current and previous manual version. | | | | |
| 02/2022 | | All | Board Approved | 4.0 |
| See the Mapping Document for a detailed list of changes between the current and previous manual version. | | | | |
| 04/2020 | Certification Exams | 2 | Exam cut scores updated effective June 1, 2020 | 3.2 |
| 10/2019 | Preface | 1 | Updated NERC map and REs | 3.1 |
| 09/2017 | All<br>Certification Examinations<br><br><br><br><br><br><br><br>Credential Maintenance | All<br><br>1<br><br><br>All<br><br><br><br>2 | Annual Review<br><br>Added additional information to clarify how the EWG is involved in the exam development process.<br><br>Added language to explain in more detail the exam development process. Matched language with test center vendor. Rearranged paragraphs for clarification.<br><br>Added exam development process diagram.<br><br>Updated language for clarification. Reorganized paragraphs for consistency. | 3.0 |

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| | | All<br><br>8 | Added Certification Process Diagram. | |
| 02/2017 | Introduction<br><br>Examinations<br><br>**Appendix A** | v<br><br>1<br><br>16, 18 | Added non-discriminatory statement<br><br>Updated Total Questions, Scored Questions, and Added Exam Cut Scores<br><br>Added overview statement for **Appendix A** Topics and adjusted number 8 of the topics. | 3.0 |
| 05/2016 | | All | Board Approved | 3.0 |
| 03/2016 | All | All<br><br>3<br><br>7 | Document reviewed to confirm accurate information.<br>Clarification of how 42-day wait period is calculated and 42-day wait period required regardless of exam failed.<br>Reduction of renewal request timeframe to 6 months prior to expiration. | 2.1 |
| 05/2014 | All | All | Updated to reflect new exam vendor information. Also, corrected certificate expiration date example to reflect actual process. | 2.1 |
| 02/2012 | All | | NERC address change<br>Style and format changes throughout<br>Eliminated detail instructions | 2.0 |
| 08/2010 | Executive Summary, II and III | 4, 16-23, 24, and 25 | Review of content for consistency with current requirements | 1.4 |
| 11/2009 | All | All | Fee increase for exams and credential maintenance | 1.3 |
| 10/2007 | II | 15 | Category defined for carry-over CE hours. | 1.3 |
| 08/2007 | All | All | Updated instructions to include instructions for the new database | 1.3 |
| 03/2007 | IV | 18 | General housekeeping and added a 45-day limit to Step 3 of DRP. Added comment about waiting for official score when available before taking action on a dispute filed with the PCGC chairman. | 1.2 |
| 03/2007 | I | 9 | Remove certificate numbering convention | 1.2 |

| Table B.1: Program Manual Changes | | | | |
|---|---|---|---|---|
| **Date** | **Section** | **Page** | **Description** | **Version** |
| 08/2006 | III | 16 | Training providers retaining documentation | 1 |
| 06/2006 | All | All | CEH to CE Hours | 1.1 |
| 06/2006 | I and II | 4, 17 | Fees | 1.1 |
| 02/2006 | All | All | Program manual | 1 |
| 05/2005 | All | All | Initial white paper expanded SOC program to include CE hours | 0 |

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# System Operator Certification Program Manual Mapping Document

## Personnel Certification and Governance Committee

### Purpose

The purpose of this document is to provide a method of tracking changes, provide a brief description of changes, and any other substantial changes from the current version to the next version.

| System Operator Certification Program Manual Revision History | | |
|---|---|---|
| **V 4.0\| February 2022** | **V 4.1\| November 2023** | **Description** |
| **Chapter 1 Certification Examinations** | | |
| Examination Process \| Special Accommodations for Disabilities | Examination Process \| Special Accommodations Requests | Renamed section and updated language.<br>Developed Special Accommodations Request form. |
| Examination Process | Examination Process \| Confidentiality of Exam Questions | Added Confidential of Exam Questions paragraph. |
| **Chapter 2 Credential Maintenance** | | |

| System Operator Certification Program Manual Revision History | | |
|---|---|---|
| **V 4.0\| February 2022** | **V 4.1\| November 2023** | **Description** |
| Deficits of CEHs for Credential Holders | Deficits of CEHs for Credential Holders | Added SOCCED maintains records in Eastern Time.<br>Example: Updated example years and clock time. |
| **Chapter 3 Hardship Clause (NERC Rules of Procedure)** | | |
| Chapter 3 – Hardship Clause (NERC Rules of Procedure) | Chapter 3 – Hardship Clause (NERC Rules of Procedure) | Updated how Hardship Request Form should be submitted. |
| **Appendix A Recognized Operator Training Topics** | | |
| Appendix A Recognized Operator Training Topics | Appendix A Recognized Operator Training Topics | Update preamble to specify number of recognized training topics that must be included in a course. |

# Compliance and Certification Committee (CCC) Procedure - 012 Revisions

## Action
Approve

## Background
Compliance and Certification Committee (CCC) monitoring program procedure -012, titled CCC Participation in NERC's Audits of CMEP Program, governs how the CCC may observe audits of the Regional Entities conducted pursuant to the NERC Rules of Procedure Appendix 4A (4A Audits). These 4A Audits, last completed in 2022 by NERC Internal Audit, assess each Regional Entity's implementation of the Compliance Monitoring and Enforcement Program (CMEP). Under Appendix 4A, a representative from the CCC may participate as an observer, at the discretion of the CCC.

At its October 11, 2023 meeting, the CCC approved proposed revisions to this procedure.

## Proposed Revisions to CCCPP-012
Based on the experiences of CCC members observing the 4A Audits completed in 2022, the CCC determined that the following revisions clarify how the CCC participates as observers in 4A Audits:

- CCC observers of 4A Audits must be CCC rostered members. This means that individuals who participate in CCC activities but are not on the CCC roster are ineligible to represent the CCC as observers of 4A Audits;
- CCC will work with Internal Audit to ensure observers are available for audit activities;
- The CCC added examples of pre-audit activities;
- The CCC's ERO Monitoring Subcommittee will receive updates on audits after NERC Internal Audit has presented the reports to the Enterprise-Wide Risk Committee (EWRC); and
- The CCC added several minor, non-substantive changes throughout the procedure.

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# CCC Participation in NERC's Audits of CMEP Programs

## CCC Monitoring Program – CCCPP-012

February 6, 2023

RELIABILITY | RESILIENCE | SECURITY




3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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# Introduction

NERC's Internal Audit (IA) function scopes, coordinates, and performs audits of the Regional Entities (REs) Compliance Monitoring and Enforcement Program (CMEP). IA's goal is to provide reasonable assurance of RE adherence to the requirements of the Regional Delegation Agreements (RDAs) and NERC's Rules of Procedure (ROP). Per the ROP, IA is required to perform the RE audits pursuant to Appendix 4A at least once every five years. The Appendix 4A audits focus on the REs' execution and effectiveness of the NERC CMEP.

This Compliance and Certification Committee (CCC) monitoring program procedure outlines how the CCC may participate in Appendix 4A audits. Appendix 4A provides CCC representatives the ability to participate and observe the audits at the CCC's discretion. This participation fulfills the CCC's role to monitor NERC's adherence to the ROP and, by delegation, RE adherence to the ROP. CCC members observation of audits provides perspective and opportunities to strengthen audit procedures designed to oversee adherence to the ROP. Furthermore, the observation role facilitates CCC collaboration around audit procedure effectiveness by adding industry's perspective for consideration by NERC IA in their audit process. This procedure addresses the following:

- CCC input into IA's engagement planning process;
- CCC participation in audits as an observer; and
- CCC information sharing concerning the status of audits, observations, and management actions to mitigate audit observations and recommendations related to the CMEP, consistent with Appendix 4A.

Consistent with the ROP and CCCPP-009, CCC members participating in the 4A audits are expected to hold the entire process in confidence, including all of the information provided, discussions held, and the draft report.

Section 1207 of NERC's ROP does not contemplate a similar role for CCC members. IA, at its discretion, may request CCC input when conducting oversight audits of RE performance. CCC input to such audits is beyond the scope of this document.

# Chapter 1: CCC Participation Process

## CCC Member Participation in Audits

IA will present the Enterprise-wide Risk Committee (EWRC)-approved list of Appendix 4A audits from the annual audit plan to the CCC at their fourth quarter meeting, and changes to the plan, if any, will be presented at subsequent quarterly CCC meetings. Any CCC member can participate in any Appendix 4A audit as an observer provided, they have met the following criteria:

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  - Audit programs and testing conclusions
  - Audit reports (draft and final) and associated management action plans
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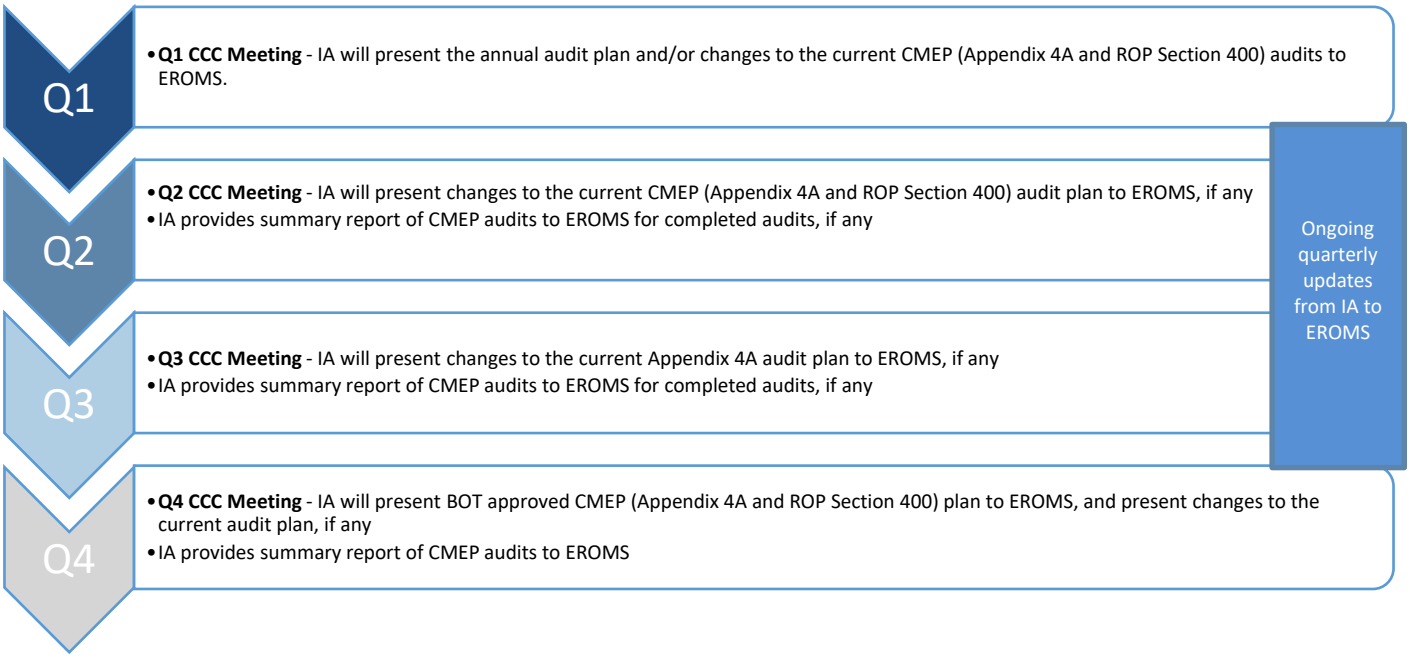
[1] See CCCPP-009 Confidentiality Protocol.

## Post-Audit Activities

IA will provide the ERO Monitoring Subcommittee (EROMS) with a report of all Appendix 4A audits upon completion, after presentation to the NERC Board Enterprise-wide Risk Committee (EWRC). Reports will describe audit scope, observations and recommendations, and management action and mitigation plans. The report will be in summary form and not attribute any observations to any particular RE.

The RE will provide periodic updates (at least quarterly) to IA on the status of NERC and/or RE management action plans/corrective action until completion. IA will provide quarterly updates to the EROMS on the status of all NERC and/or RE management action plans and corrective action until completion, including any extensions or repeat issues consistent with practices governed by the IA follow-up process. If applicable, any EROMS concerns will be communicated by EROMS to the CCCEC and IA. If applicable, at the prerogative of CCC leadership, any concerns will be communicated by the CCC Chair to the EWRC.

## Timeline of Recurring CCC 4A Audit Participation Touch Points



# Chapter 2: Data Retention and Confidentiality

## Records Retention

CCC members, including those serving as audit observers, will not maintain or retain any records associated with the activities outlined in this procedure. Upon completion of participation, each CCC observer will purge any documents and records associated with the audit as advised by NERC. NERC will remove the CCC observer access to the dedicated audit workspace on the NERC Extranet upon audit completion.

## Confidentiality Management

NERC and the CCC observers will maintain confidentiality of all information designated as such in accordance with Section 1500 of the ROP. Information deemed to be Critical Energy Infrastructure Information or Critical Electric Infrastructure Information will be redacted from materials provided to the CCC observers.

# Chapter 3: Revision History

| Date | Version Number | Comments |
|---|---|---|
| November 29, 2017 | 1.0 | Approved by the Compliance and Certification Committee |
| February 8, 2018 | | Approved by NERC Board of Trustees |
| September 22, 2021 | 2.0 | Revision approved by the Compliance and Certification Committee |
| November 4, 2021 | | Approved by the NERC Board of Trustees |
| Month XX, 2023 | 3.0 | Revision approved by the Compliance and Certification Committee |
| Month XX, 2023 | | Approved by the NERC Board of Trustees |

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# CCC Participation in NERC's Audits of CMEP Programs

## CCC Monitoring Program – CCCPP-012

~~November 4, 2021~~Month XX, 2023

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3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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- If it becomes necessary for established schedules to change, the CCC observer(s) will coordinate with each other and NERC Internal Audit to ensure that at least one CCC observer is present for each audit activity to the greatest extent possible.

~~Despite IA's best efforts to execute audits in accordance with established schedules, CCC members participating in audits should understand that schedules are fluid and can change at any time for a variety of reasons. Furthermore, it is important for IA to complete its audit work within certain timeframes in order to~~to meet the needs of its ~~stakeholders. For these reasons, it may not be possible to accommodate every schedule change request made by a CCC observer.~~

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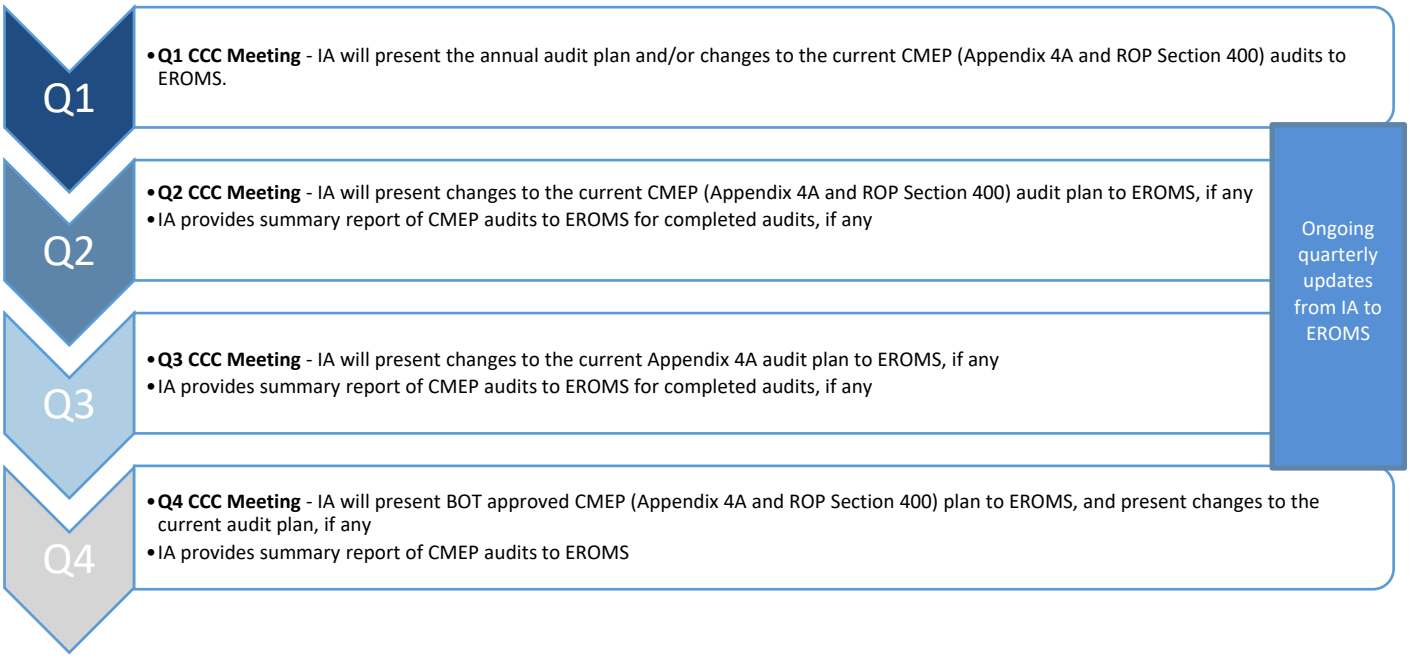

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# Personnel Certification Governance Committee (PCGC) Board Report

## Action

Approve the PCGC 2024 Work Plan, and receive information regarding recent activities.

## Background

The PCGC fourth quarter meeting was held in-person on October 31, 2023 – November 1, 2023 in Atlanta, GA. During the fourth quarter meeting, the PCGC and Credential Maintenance Working Group (CMWG) discussed the call with the Federal Energy Regulatory Commission (FERC) regarding the proposed program changes.

## Summary

Program Changes – FERC is discussing the program changes related to the key findings below. FERC, PCGC, CMWG leadership, and NERC will have further discussions.

Report Key Findings

- An individual's performance peaks and declines over the course of their work life.
- Knowledge and skill retention is improved when refresher training is spaced across time.
- It is valid to establish equivalency between different types of educational activities for the purposes of recertification.
- An increase in the quality of learning activities can offset a decrease in the total (contact) hours without impacting the achievement of knowledge or skill objectives.
- A portion of credential maintenance activities should be practice-based and designed to strengthen and assess proficiency.
- Many credential holders are over-credentialed due to the perception that the Reliability Operator (RC) credential is of a higher quality and allows both the credential holder and the employer greater flexibility.
- Stakeholders (both credential holders and managers) prefer continuing education that provides opportunities for professional development, specifically the growth of knowledge and skills.

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# Personnel Certification Governance Committee 2024 Work Plan

February 2024




3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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# Introduction

The purpose of this *2024 Work Plan* is to identify the anticipated activities and deliverables of the NERC Personnel Certification Governance Committee (PCGC). The plan is based on the responsibilities assigned to the PCGC by the NERC Board of Trustees for oversight of the policies and processes used to implement and maintain the integrity and independence of NERC's System Operator Certification (SOC) Program. Tasks have been identified by the PCGC that are required to fulfill these responsibilities. Additionally, the PCGC identified projects and deliverables that will further support the goals of the ERO Enterprise Operating Plan and the ERO Enterprise Long-term Strategy.

# Background

The PCGC is a Board-appointed stakeholder committee that serves and reports directly to the NERC Board of Trustees. In accordance with the NERC by-laws, the purpose of the PCGC is to provide oversight to the policies and processes used to implement and maintain the integrity and independence of NERC's SOC Program. The governance authority and structure of the PCGC is to be implemented and maintained so that policies and procedures are established to protect against undue influence that could compromise the integrity of the process for the SOC.

The PCGC reports directly to the NERC Board of Trustees and the NERC president and CEO regarding governance and administration of the SOC Program.

The PCGC has autonomy in all operational processes for the SOC Program, including the following:

- Policies and procedures of the SOC Program, including eligibility requirements and application processing
- Requirements for personnel certification, maintaining certification, and recertification
- Examination content, development, and administration
- Examination cut score
- Grievance and disciplinary processes
- Governing body and subgroup meeting rules, including the agenda, the frequency of meetings, and related procedures
- Subgroup appointments and work assignments
- Publications about personnel certification and recertification
- Setting fees for applications to become certified, receiving applications for maintaining certification, and administrating all other services provided as a part of the personnel certification and recertification activities
- Program funding, spending, and budgeting authority
- Financial matters related to the operation of the program that are segregated from other NERC activities

# Strategic Planning and Ongoing Efforts

The PCGC, in coordination with the Credential Maintenance Working Group (CMWG) and Exam Working Group (EWG), develops annual projects to address the SOC Program needs. Below are the five projects planned for 2023.

## Project 1: Implement recommendations for NERC Certified System Operator Credentials - Ongoing

The Credential Maintence Research Project, led by EPRI , provided 19 program and administrative recommendations for the System Operator certification and credential maintenance programs to the PCGC and CMWG in August 2022.

The CMRPTF has reviewed evidence and has proposed a path forward for potential changes to the existing NERC Certified System Operator (NCSO) certification and Credential Maintenance programs.

The PCGC and CMWG, pending FERC approval, will develop implementation plans and begin the process for implementing the proposed changes.

## Project 2: SOCCED Enhancements - Ongoing

The PCGC, CMWG, and NERC staff will continue to work on enhancements to System Operator Certification and Continuing Education Database (SOCCED) for the provider, candidate, and NERC staff administration.

The PCGC, CMWG, and NERC staff will work to further enhance and develop the SOCCED database while maintaining an accurate system of records with an additional focus to gain efficiencies in the administration of the NERC SOC Program, which includes system operator certification and credential maintenance,

The SOCCED Enhancement Project is ongoing by the PCGC in order to target specific areas within SOCCED for improvement.

## Project 3: Exam Item Bank Maintenance - Ongoing

The PCGC continues to collaboration with the Exam Working Group and psychometric consultant to keep the SOC Exam Item Bank current. The EWG will continue the review process on the SOC Exam Item Bank and its relevance for the validity of exams implemented using linear-on-the-fly testing. Having a current and relevant item bank keeps a high trust in the certification process and individual examinee challenges low.

The Exam Item Bank maintenance is an ongoing project by the PCGC to keep the SOC Exam Item Bank current and relevant for the validity of exams implemented with linear-on-the-fly testing.

The Exam Working Group and the psychometric consultant vendor should complete a job task analysis every three years.

## Project 4: Exam Program - New

NERC staff will identify the requirements for System Operator scheduling and exam program in North America.

The PCGC and NERC staff will ensure Canadian candidates have the same ability to test as candidates within the continental United States. The PCGC and NERC staff's monitoring will reduce risks on having to implement stand-up centers and/or cause undue burden on Canadian candidates.

# 2024-2026 Standards Committee Strategic Work Plan

## Action

Approve the Standards Committee 2024-2026 Work Plan, and receive information regarding recent activities.

## Background

Attached is the Standards Committee (SC) 2024 -2026 Work Plan for Board of Trustees consideration and approval. Also, included is the Standards Committee Quarterly Report highlighting activities over the last quarter.

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# 2024-2026 Standards Committee Strategic Work Plan

## Introduction

The Standards Committee (SC) Strategic Work Plan (Plan) focuses SC actions on overseeing Standards development activities, including:

- Addressing emerging risks using input from various sources, including the Reliability and Security Technical Committee (RSTC) and the Reliability Issues Steering Committee (RISC)
- Prioritizing standards development activities
- Supporting process improvements to enhance agility and effectiveness
- Addressing Federal Energy Regulatory Commission (FERC) directives

### Emerging Risks

Through input by a NERC technical committee, the RISC, or a governmental authority (such as FERC), the SC authorizes the development of new or revised standards to mitigate emergent risks, as appropriate.

## Vision, Mission, and Guiding Principles

### Vision

A comprehensive body of results-based Reliability Standards focused on minimizing risk to the North American bulk power system (BPS).

### Mission

The SC is a ballot body elected stakeholder Committee serving and reporting directly to the NERC Board of Trustees (Board). The SC partners with NERC staff to manage and oversee development of a comprehensive set of results-based Reliability Standards prioritized and focused on risk to the bulk power system while maintaining attributes of due process, openness, and balance of interests.

### Guiding Principles

- Promote and implement a collaborative working environment with other NERC Standing Committees, NERC Standards staff, stakeholders, and standard drafting teams.
- Execute the Standards development process openly and inclusively for effective and efficient use of NERC and industry resources.
- Promote and take a leadership role on consensus-building activities.

## Work Plan

Consistent with the 2023-2025 Reliability Standards Development Plan (RSDP), this Plan recognizes the transition of the Standard development process to primarily address a small number of FERC directives,

emerging risks, and process improvements. The details of the goals and objectives for 2024-2026 appear in the RSDP.

### Focus Area: Process Improvement

To promote continuous improvement, existing processes must be periodically reviewed. In support of the vision, mission, and guiding principles above, the SC will undertake certain actions.

#### Monitor Implementation of Board Recommended Enhancements to the Reliability Standards Development Process from the Stakeholder Engagement Group

- The SC Chair and Vice Chair led an initiative in 2023 to implement the Board recommendations specific to the SC to enhance the standards development process. Implementation of these recommendations, requiring SC coordination with NERC Staff, other standing committees, and the Standing Committee Coordinating Group (SCCG), is complete. The SC leadership will monitor the effective deployment of the recommendations.

#### Standards Grading

- In 2023 the SC and the Compliance and Certification Committee convened a joint task force to evaluate the existing Standards Grading process, identify opportunities, and provide recommendations for improvement. This review occurred in lieu of the annual Standards Grading exercise. The task force's work is still ongoing and will reconvene in early 2024.

### Focus Area: Risk Mitigation

To develop a comprehensive body of risk and results-based Reliability Standards, the SC will focus on the activities below:

#### Standards Development Prioritization

- In support of the recommendations of the Stakeholder Engagement Group, the SC will partner with NERC Staff and consult with the SCCG to prioritize standards development projects based on reliability risk effectively.

#### Risk Framework

- Continue to execute and build on the role of the SC in the NERC Risk Mitigation Framework, which includes active participation in the SCCG identified opportunities for feedback loops.

### Focus Area: Standards Quality

The Reliability Standards should be clearly written, effective in mitigating risk to the BPS, and not unnecessarily administratively burdensome. To ensure the highest quality body of Standards, the SC will focus on the following:

#### FERC Directives

- As detailed in the 2024-2026 Reliability Standards Development Plan, there are eleven outstanding FERC directives being resolved through the Development process. The SC will

continue to monitor progress and support final resolution of these directives, as well as any future work related to directives.

### Periodic Reviews

- The Project Management and Oversight Subcommittee (PMOS) and NERC staff will identify and schedule Periodic Reviews for SC endorsement. The PMOS will use the most recent Standards Grading results to prioritize/schedule by the end of first quarter 2023.

### Transition of Guidelines and Technical Basis to Technical Rationale

- The SC will continue to review Guidelines and Technical Basis documents for transition to Technical Rationale documents while moving compliance examples to Implementation Guidance.

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# Reliability Standards

## Semi-Annual Report

February 15, 2024

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3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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**3353 Peachtree Road NE**
**Suite 600, North Tower**
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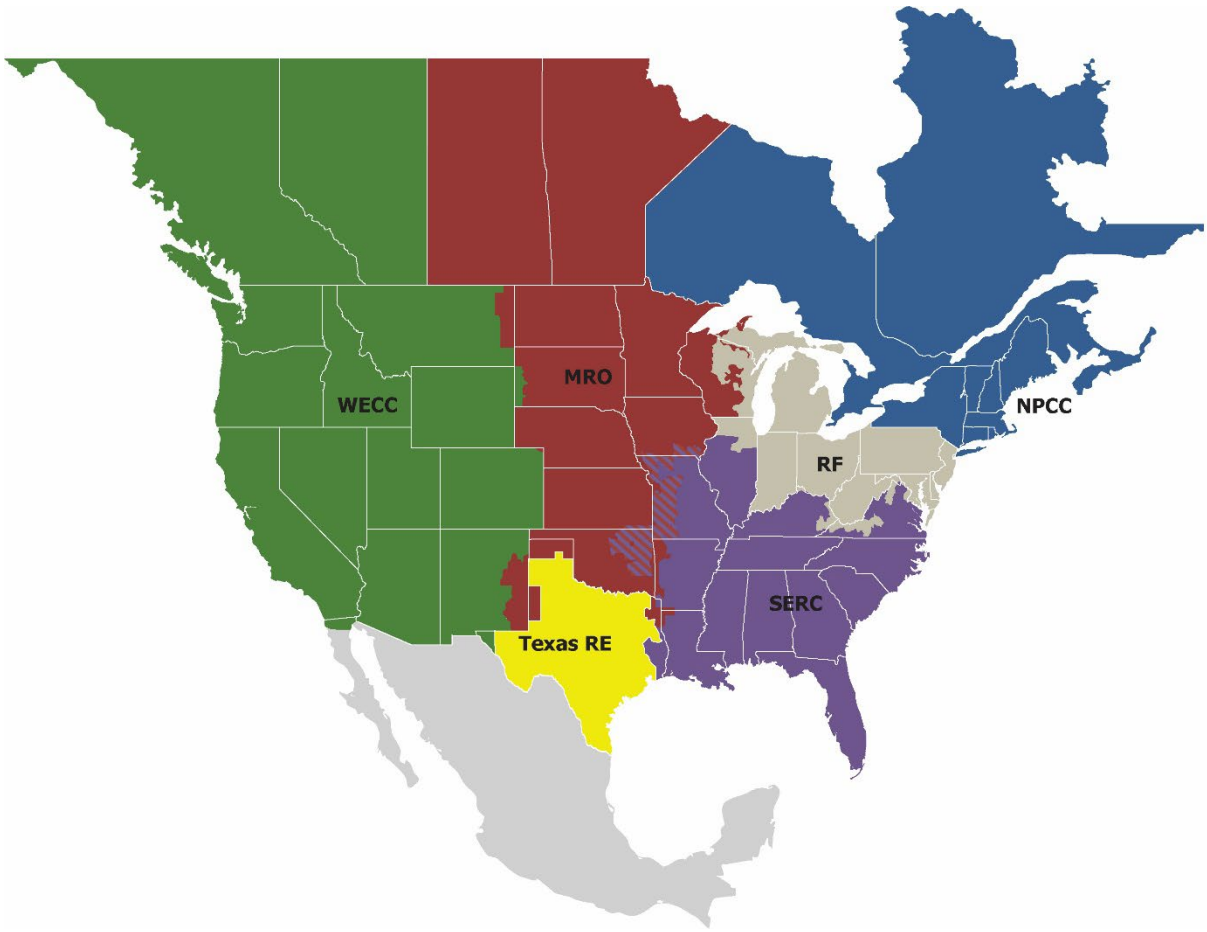
# Preface

Electricity is a key component of the fabric of modern society, and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of NERC and the six Regional Entities, is a highly reliable, resilient, and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six Regional Entities, as shown on the map and in the corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ReliabilityFirst |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

# Chapter 1: Standards Development Forecast

## Board Forecast for Standard Projects in Active Development

The following projections reflect anticipated Board of Trustees (Board) adoption dates for continent-wide Reliability Standards.

### February 2024 or after

- Project 2016- 02: Modifications to CIP Standards (virtualization)
- Project 2017-01: Modifications to BAL-003-1.1 (phase 2)
- Project 2019-04: Modifications to PRC-005-6
- Project 2020-02: Modifications to PRC-024 (Generator Ride-through)
- Project 2020-06 Verifications of Models and Data for Generators
- Project 2021-01 Modifications to MOD-025 and PRC-019
- Project 2021-02 Modifications to VAR-002
- Project 2021-03 CIP-002 Transmission Owner Control Centers
- Project 2021-04 Modifications to PRC-002-2
- Project 2021-08 Modifications to FAC-008
- Project 2022-02 Modifications to TPL-001-5.1 and MOD-032-1
- Project 2022-03 Energy Assurance with Energy-Constrained Resources
- Project 2022-04 EMT Modeling
- Project 2022-05 Modifications to CIP-008 Reporting Threshold
- 2023-01 EOP-004 IBR Event Reporting
- 2023-02 Performance of IBRs
- 2023-04 Modifications to CIP-003
- 2023-05 Modifications to FAC-001 and FAC-002
- 2023-06 CIP-014 Risk Assessment Refinement
- 2023-07 Transmission System Planning Performance Requirements for Extreme Weather
- 2023-08 Modifications of MOD-031 Demand and Energy Data

## Projects with Regulatory Directives

Table 1 below lists the current projects with regulatory directives. As of December 31, 2023, eleven standards-related directives must be resolved through standards development activities (not including non-standards related directives).[1]

[1] An eleventh directive requires NERC to file quarterly updates in the project schedules for Project 2016-02 Modifications to CIP Standards and Project 2019-02 BES Cyber System Information Access Management.

| Table 1: Projects with Regulatory Directives | | |
|---|---|---|
| **Project** | **Regulatory Directives** | **Regulatory Deadline** |
| Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination | 2 | February 16, 2024 |
| Project 2023-03 Internal Network Security Monitoring (INSM) | 1 | July 9, 2024 |
| Project [# TBD] Modification of TPL-001-5.1 – Transmission System Planning Performance Requirements | 1 | December 23, 2024 |
| FERC Order 901 (IBR/DER Projects) | 6[2] | November 2024, 2025, 2026 |

# Trend in Number of Reliability Requirements

As NERC Reliability Standards continue to mature, NERC analyzes the trend in the total number of requirements in the United States since 2007 when Reliability Standards became enforceable.

The *US Effective Date Status/Functional Applicability*[3] spreadsheet was used to analyze the number of requirements based on the U.S. Effective Date for each requirement shown in the charts below. Figure 1 displays the Trend in Number of Requirements for Continent-Wide standards, while Figure 2 displays Regional Reliability Standards.[4] Standards with variances were not included in the requirement count. Projections from projects that include standards currently under development, board adopted standards and board approved retirements are also included in the total number of requirements based on their projected effective or inactive date.[5]

The trend for the total number of requirements indicates a constant flat trend line for the last four years, with a significant decline from 2017 to 2021 for Continent-wide standards and a significant decline in the total number of requirements from 2019 to 2021 for Regional Reliability Standards. Figure 1 indicates 445 continent-wide requirements; Figure 2 indicates 70 Regional Reliability standards forecast for 2027

[2] Within these six categories of directives, NERC is required to address multiple issues that may span multiple standards development projects.
[3] Available from the Standards section of the NERC website: http://www.nerc.com/pa/Stand/Pages/default.aspx
[4] Charts were developed using Q1 2023 data.
[5] These projects include the following: Project 2019-06 (EOP-011-2, IRO-010-4, TOP-003-5), Project 2015-10 (TPL-001-5.1)

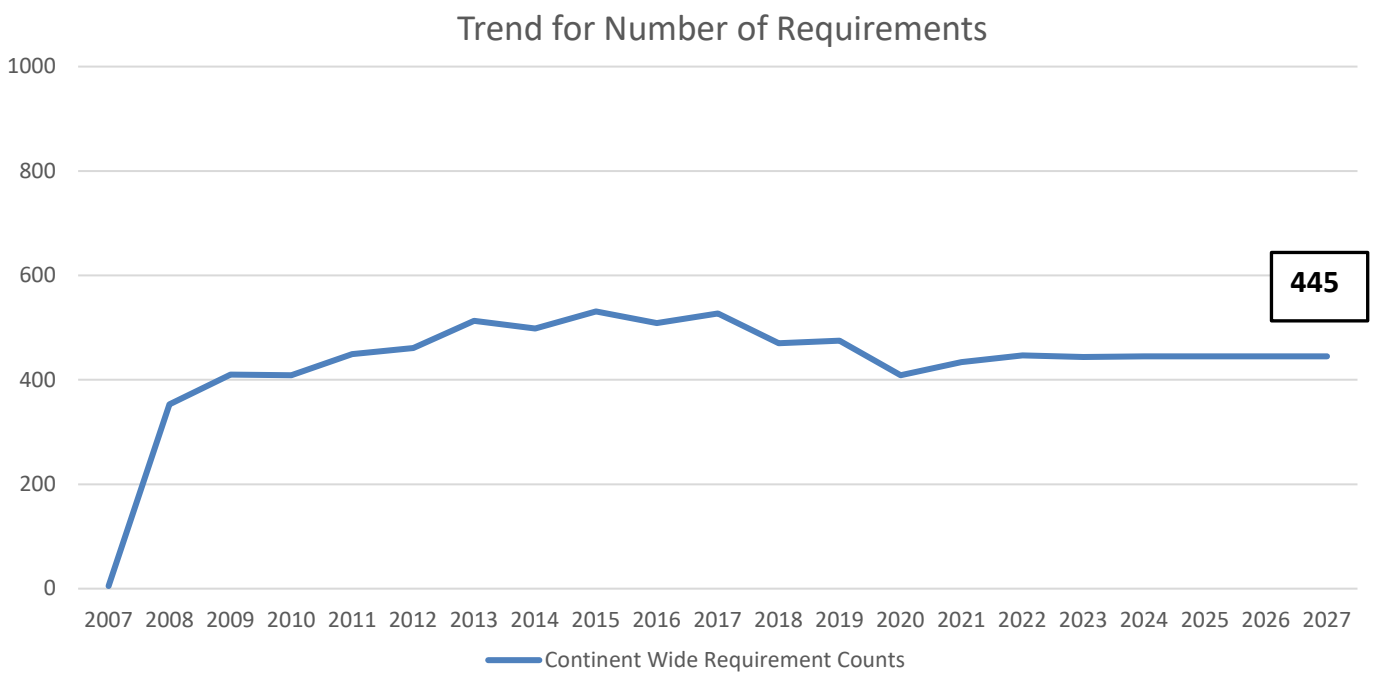
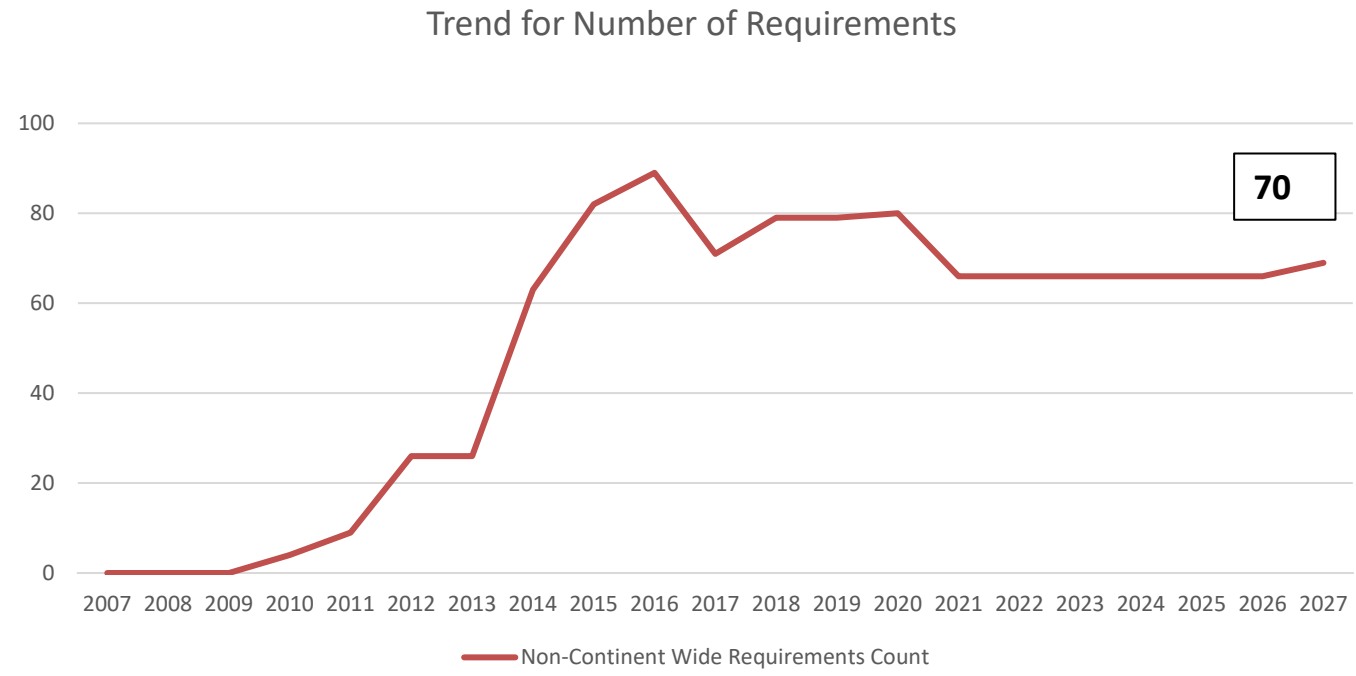



**Figure 2: Trend for Number of Requirements for Regional Reliability Standards**



# Chapter 2: Regulator Update

## NERC FILINGS
## October 1, 2023 – December 31, 2023

| FERC Docket No. | Filing Description | FERC Submittal Date |
|---|---|---|
| RM13-11-000 | 2023 Frequency Response Annual Analysis Report<br><br>NERC submitted its 2023 Frequency Response Annual Analysis report for the administration and support of Reliability Standard BAL-003-2 - Frequency Response and Frequency Bias Setting. | 10/16/2023 |
| RD24-1-000 | Petition for Approval of Proposed Reliability Standards EOP-011-4 and TOP-002-5 and Request for Expedited Action.<br><br>NERC submitted a Petition for Approval of Proposed Reliability Standards EOP-011-4 and TOP-002-5 and request for expedited action. | 10/30/2023 |
| RD23-5-000 | Amended Petition for Approval of Proposed Reliability Standard PRC-023-6<br><br>As directed by the October 10, 2023 letter order requesting additional information, NERC submitted an amended petition for approval of proposed Reliability Standard PRC-023-6. | 11/3/2023 |
| RD22-4-001 | Inverter Based Resources Work Plan Progress Update<br><br>NERC submitted a progress update on its Inverter Based Resources Work Plan as directed by FERC in its November 17, 2022 Order. | 11/14/2023 |
| RM19-20-000 | Joint Compliance Filing of NERC and WECC<br><br>NERC and WECC submitted a Compliance Filing regarding regional Reliability Standard BAL-002-WECC-3 as directed by FERC Order No. 876. Attachment 2 can be found here. | 12/15/2023 |
| RM05-17-000; RM05-25-000; RM06-16-000 | 2024-2026 Reliability Standards Development Plan<br><br>NERC submitted its Reliability Standards Development Plan (RSDP) for 2024-2026. This informational filing provides a status update on active development projects and a forecast of future work to be undertaken by NERC and its stakeholders throughout the upcoming year. | 12/15/2023 |
| RD24-2-000 | Joint Petition for Approval of Proposed Regional Reliability Standard VAR-501-WECC-4<br><br>NERC and WECC submitted a Joint Petition for Approval of Proposed Regional Reliability Standard VAR-501-WECC-4. | 12/15/2023 |

| | | |
|---|---|---|
| RD20-2-000 | CIP SDT Schedule December Update Informational Filing<br><br>NERC submitted an informational filing as directed by FERC in its February 20, 2020 Order. This filing contains a status update on one standard development project relating to the CIP Reliability Standards. | 12/15/2023 |

# FERC ISSUANCES
# October 1, 2023 – December 31, 2023

| FERC Docket No. | Issuance Description | FERC Issuance Date |
|---|---|---|
| RD23-5-000 | RFI on PRC-023-6<br><br>FERC issued a request for information seeking additional information to process NERC's March 2, 2023 petition requesting approval of proposed Reliability Standard PRC-023-6. The response was due within 30 days of the order. | 10/10/2023 |
| RM22-12-000 | Order No. 901 - Final Rule Reliability Standards to Address Inverter-Based Resources<br><br>FERC issued its Final Rule directing NERC to develop new or modified Reliability Standards that address reliability gaps related to inverter-based resources in data sharing, model validation, planning and operational studies, and performance requirements. FERC also directs NERC submit an informational filing within 90 days on how NERC will develop standards to address these topic areas. | 10/19/2023 |
| RM19-17-001 | Order No. 902 - Final Rule to Retire the MOD A Reliability Standards and Requirements<br><br>FERC issued a Final Rule approving NERC's request to retire the MOD A Reliability Standards and requirements. | 10/26/2023 |
| RD23-6-000 | Order Approving Reliability Standards IRO-010-5 and TOP-003-6.1<br><br>FERC issued a letter order approving Reliability Standards IRO-010-5 and TOP-003-6.1. | 11/2/2023 |
| RR23-4-000 | Order Approving Standards ROP Revisions<br><br>FERC issued an Order Approving Revisions to the NERC Rules of Procedure (ROP) Regarding Reliability Standards Development. The order also directs a compliance filing within 18 months. | 11/28/2023 |
| RR23-1-000 | Order Approving Revised Texas Reliability RSDP<br><br>FERC issued an Order approving the revised Texas Reliability Entity Regional Reliability Standards Development Process (RSDP). | 12/1/2023 |

# Chapter 3: Standards Committee Report

## Summary

This report highlights some of the key activities of the Standards Committee (SC) during the fourth quarter of 2023.

At its October meeting, the SC:

- Endorsed 2024-2026 Reliability Development Plan.
- Accepted the revised Project 2023-02 Performance of Inverter-Based Resources (IBRs) standard authorization request (SAR) with the modification that the SAR title reverts to the original title and to authorize drafting revisions to the Reliability Standard identified in the SAR.
- Authorized initial posting for Project 2023-04 of proposed Reliability Standard CIP-003-A and the associated Implementation Plan for a 45-day formal comment period, with ballot pool formed in the first 30 days and parallel initial ballots and non-binding polls on the Violation Risk Factors (VRFs) and Violation Severity Levels (VSLs), conducted during the last 10 days of the comment period and to authorize the solicitation of additional drafting team (DT) members.
- Appointed chair, vice chair, and members to the Project 2023-06 CIP-014 Risk Assessment Refinement DT, as recommended by NERC staff.
- Appointed chair, vice chair, and members to the Project 2023-07 Modifications to TPL-001-5.1 Transmission System Planning Performance Requirements for Extreme Weather DT, as recommended by NERC staff.

At its November meeting, the SC:

- Deferred consideration of the Transmission Planning Energy Scenarios SAR to the December 2023 SC meeting.
- Authorized initial positing for Project 2020-06 Verification of Models and Data for Generators of proposed definitions for IBR and IBR Unit that would be included in the Glossary of Terms for a 45-day formal comment period, with ballot pools formed in the first 30 days.
- Authorized drafting of new or modified Reliability Standard(s) as identified in the Project 2023-07 Transmission System Planning Performance Requirements for Extreme Weather SAR.

At its December meeting, the SC:

- Approved the 2024 – 2026 Standards Committee Strategic Work Plan.
- Approved 2024-2025 Term Elections.
- Accepted the Risk Management for Third-Party Cloud Services SAR, authorized the posting of the SAR for a 30-day formal comment period, and authorized solicitation of the DT members.
- Accepted the Transmission Planning Energy Scenarios SAR submitted by NERC and the Regional Entities representing each interconnection, authorized posting of the SAR for a 30-day formal comment period; and authorized solicitation of the DT members.
- Appointed chair, vice chair, and members to the Project 2023-05 Modifications to FAC-001 and FAC-002 DT, as recommended by NERC staff.
- Appointed additional members to the Project 2021-03 CIP-002 SDT, as recommended by NERC staff.
- Approved waiver of provisions for Project 2020-02 Modifications to PRC-024 (Generator Ride-through):

  - Initial formal comment and ballot period reduced from 45 calendar days to as few as 25 calendar days, with ballot pools formed in the first 10 days and initial ballot and non-binding poll of VRFs and VSLs conducted during the last 10 days of the comment period.
  - Additional formal comment and ballot period(s) reduced from 45 calendar days to as few as 15 calendar days, with ballot conducted during the last 10 days of the comment period.
  - Final ballot reduced from 10 calendar days to as few as five calendar days.
- Approved waiver of provisions for Project 2023-02 Analysis and Mitigation of BES Inverter-Based Resources Performance:
  - Initial formal comment and ballot period reduced from 45 calendar days to as few as 25 calendar days, with ballot pools formed in the first 10 days and initial ballot and non-binding poll of VRFs and VSLs conducted during the last 10 days of the comment period.
  - Additional formal comment and ballot period(s) reduced from 45 calendar days to as few as 15 calendar days, with ballot conducted during the last 10 days of the comment period.
  - Final ballot reduced from 10 calendar days to as few as five calendar days.
- Approved waiver of provisions for Project 2021-04 Modifications to Disturbance Monitoring and Reporting Requirements:
  - Additional formal comment and ballot period(s) reduced from 45 calendar days to as few as 15 calendar days, with ballot conducted during the last 10 days of the comment period.
  - Final ballot reduced from 10 calendar days to as few as five calendar days.
- Approved waiver of provisions for Project 2023-07 Transmission System Planning Performance Requirements for Extreme Weather:
  - Initial formal comment and ballot period reduced from 45 calendar days to as few as 25 calendar days, with ballot pools formed in the first 10 days and initial ballot and non-binding poll of VRFs and VSLs conducted during the last 10 days of the comment period.
  - Additional formal comment and ballot period(s) reduced from 45 calendar days to as few as 15 calendar days, with ballot conducted during the last 10 days of the comment period.
  - Final ballot reduced from 10 calendar days to as few as five calendar days.
- Approved waiver of provisions for Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination:
  - Additional formal comment and ballot period(s) reduced from 45 calendar days to as few as 10 calendar days, with ballot conducted during the last five days of the comment period.
- Authorized initial posting of proposed Reliability Standard CIP-007-X and the associated Implementation Plan for a 35-day formal comment period, with a ballot pool formed in the first 20 days and parallel initial ballots and non-binding polls on the VRFs and VSLs conducted during the last 10 days of the comment period.
- Approved revisions to the SC charter for submission to the NERC Board of Trustees.

# Compliance and Certification Committee (CCC) Board Report

## Action

Approve the CCC 2024 Work Plan, and receive information regarding recent activities.

## Summary

The CCC held its Q4 meeting at the offices of Arizona Public Service in Phoenix, Arizona on October 10-12. In addition to the regular CCC business, the CCC held discussions regarding residual risk and the Align tool.

The CCC met via WebEx on December 7, 2023 to approve the 2024 CCC Work Plan. The Work Plan provides an overview of the critical activities and deliverables in 2024. It is also designed to be flexible enough to incorporate other assignments or responsibilities that may emerge during the year. The Work Plan is attached for final approval.

The CCC continues to actively participate in the Align Users Group, and this ongoing exchange continues to foster a productive dialogue that is enhancing the value of the Align tool. We appreciate the additional outreach efforts by NERC to solicit additional feedback from industry on a quarterly basis, an approach the CCC supports. The initial quarterly meeting provided feedback on the following topic areas:

- Enforcement & Mitigation
- Periodic Data Submittals, Self-Certification, Technical Feasibility Exceptions
- Scheduling, Audits, Spot Checks
- Inherent Risk Assessments and Compliance Oversight Plans

The CCC has begun planning on the 2023 Stakeholder Perceptions Report. The report will be presented to the Enterprise-Wide Risk Committee at its Q2 2024 meeting.

The CCC met virtually on January 23-25. 2024. Key areas of interest include but are not limited to updates related to changes to the registration criteria associated with inverter-based resources as well as a Focused Discussion on the impact that recent directives related to standards will have on the NERC Compliance Monitoring and Enforcement Program.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# NERC Compliance and Certification Committee 2024 Work Plan

NERC Board Approval: February 15, 2024

Version Approved by CCC: December 7, 2023

**RELIABILITY | RESILIENCE | SECURITY**




**3353 Peachtree Road NE**
**Suite 600, North Tower**
**Atlanta, GA 30326**
**404-446-2560 | www.nerc.com**

# Table of Contents

# Introduction

The purpose of this Work Plan is to identify the anticipated activities and deliverables of the NERC Compliance and Certification Committee (CCC) for 2024. The plan is based on the responsibilities assigned to the CCC by the NERC Board of Trustees (Board) for programs across the ERO Enterprise and tasks identified by the CCC that are required to fulfill these responsibilities.

The Committee, as prescribed by January 2007 FERC Compliance order, upheld in the June 7, 2007 FERC Order's Key Provision 8, and enumerated in the NERC Rules of Procedure (ROP), regularly assesses NERC's adherence to the ROP for several of its programs as part of the Committee's ongoing work. As an industry committee independent of these programs, members are able to provide support and guidance relative to NERC's Compliance Monitoring and Enforcement Program (CMEP), Organization Registration and Certification Programs (ORCP), and Reliability Standards development. In 2024, the CCC will continue to work with policymakers and stakeholders to further refine the maturing and ongoing role for the CCC with respect to the ERO's adherence to its processes, procedures, and statutory obligations.

Many of the CCC projects and deliverables included in this Work Plan are intended to support the goals of the ERO Enterprise Operating Plan and the ERO Enterprise Long-term Strategy.

In addition, the CCC will support the ERO vision to address and prioritize emerging risks to reliability and security through active participation in the NERC Standing Committee Coordination Group (SCCG) and as a feedback loop in the ERO Enterprise *Framework to Address Known and Emerging Reliability and Security Risks*.

The CCC subcommittees and any subgroups established perform certain assigned tasks on behalf of and under the supervision of the CCC. In collaboration with ERO Enterprise Management, the CCC delegates responsibilities to the following subcommittees for projects and activities:

- Organization Registration and Certification Subcommittee (ORCS)
- ERO Monitoring Subcommittee (EROMS)
- CCC Nominating Subcommittee (NS)

The following pages represent an outline of the work plan deliverables and detailed project information.

# Vision, Mission and Guiding Principles

## Vision

Effective risk-based CMEP and ORCP implemented in a consistent manner that enable the ERO Enterprise to focus resources on risks to the reliability of the Bulk Power System (BPS) and risks specific to registered entities.

## Mission

The CCC is a Board-appointed stakeholder committee serving and reporting directly to the Board. In that capacity under a FERC-approved charter, and as approved by the NERC Board, and set forth in NERC's ROP, the CCC will engage with, support, and advise the Board, the Board's Regulatory Oversight Committee (ROC) and the NERC Board of Trustees Enterprise-wide Risk Committee (EWRC) regarding all facets of the NERC CMEP and ORCP.

## Guiding Principles

The CCC partners with NERC leadership on a variety of key NERC initiatives and criteria for evaluation and assessment of the effectiveness of NERC programs. To support this endeavor, the CCC develops an annual work plan to identify the activities that the CCC intends to perform each year to fulfill its responsibilities and any additional responsibilities the Board has established for the CCC.

The CCC provides for balanced discussion, commentary, and recommendations on compliance issues by bringing together a diversity of opinions and perspectives from NERC member sectors.

Members are appointed to the CCC by the Board and serve on the committee at the pleasure of the Board.

Individuals serving on the committee will generally include:

- senior-level industry experts who have familiarity, knowledge, and experience in the areas of compliance, compliance enforcement, compliance administration and management, organization registration, organization certification, and NERC and Regional standards.
- normally involved with internal compliance programs within their respective organizations.

Committee members are expected to support the interests of the sector they represent, to the best of their ability and judgment.

# Chapter 1: Strategic Planning Efforts

The projects included in this category are intended to address succession planning within the CCC as well as clarify the CCC's role in the broader scope of the maturation of the risk-based approach to reliability and security. Further details on these projects are shown in the following table.

| Project Name | Activities | Resource(s) |
|---|---|---|
| **Industry Collaboration and Communication** | 1) Maintain direct involvement in the SCCG.<br>2) Enhance communications and participation with industry groups with a focused plan for coordination.<br>3) Ensure that materials developed for onboarding as members join the CCC and to provide to industry stakeholders looking for background information about the CCC are updated.<br>4) Create feedback loops with the Member Representatives Committee (MRC) and seek opportunities to create additional feedback loops with industry organizations as it relates to CMEP and ORCP activities.<br>5) Build upon the successful deployment of the ERO Stakeholder Perceptions Program. | CCC, CCC Subcommittees |
| **Enhancing CCC Program Efficiencies** | 1) Continue evaluation of various activities and functions of subcommittees/working groups to determine ways to improve the effectiveness and efficiency of the CCC.<br>2) Periodically review EROMS, ORCS, and Nominating Subcommittee Scopes.<br>3) Explore opportunities to "cross train" across various CCC subcommittees.<br>4) Work with NERC to develop criteria to evaluate the goals, tools, and procedures of each Regional Entity Compliance Monitoring and Enforcement Program to determine the effectiveness of each Regional Entity Compliance Monitoring and Enforcement Program. | CCC, CCC Subcommittees, NERC Standing Committees, NERC Management |

# Chapter 2: Ongoing Responsibilities

The table below summarize the list of ongoing responsibilities assigned to the CCC. In general, responsibilities are divided into two primary categories: 1) activities that respond to the CCC Charter and the NERC ROP, and 2) activities that support the NERC mission. Further details on the deliverables and projects are discussed in the next section by project number identified below.

| Project Name | Activities | Resource(s) |
|---|---|---|
| **Review and Update of CMEP and CCC Programs and Procedures** | 1) Review and monitor changes to the CMEP and other NERC initiatives that could require updates or changes to CCC programs and procedures.<br>a) Annual evaluation and update of criteria for assessing effectiveness of RE CMEP activities, considering ERO input, to appropriately reflect program modification, improvements, and prior years' evaluations.<br>b) Assess impact of risk-based CMEP implementation on: (a) monitoring practices (as embodied in CCCPP-010); (b) enforcement; and (c) Reliability Standards development. Assist NERC with annual evaluation of goals, tools, and procedures of each RE CMEP to determine effectiveness of each RE implementation of CMEP, using criteria developed by the CCC.<br>c) Review the Board Compliance Guidance Policy with the MRC, provide stakeholder feedback on the programs and take associated actions to support improvements working in collaboration with NERC Management.<br>d) Per the terms of CCCPP-011, conduct annual review of the criteria for approval to become an organization seeking to be pre-qualified to submit Implementation Guidance to the ERO Enterprise.<br>2) Evaluate and review CCC Charter, including functions and responsibilities, and any potential ROP changes impact.<br>3) Explore opportunities to "cross-train" among EROMS, ORCS and NS Subcommittees.<br>4) Work with NERC staff to continue to improve the CCC Webpage and communication with industry with additional outreach. | CCC, CCC Subcommittees, NERC Management |
| **Program Support Efforts (CMEP, Standards Development)** | 1) Identify and participate in risk-based compliance assurance outreach, such as internal controls, and feedback discussions.<br>2) Support rollout of key activities or CMEP and ORCP program revisions in accordance with ERO enterprise goals as requested.<br>3) Partner with ERO Enterprise to provide feedback on<br>a) Reliability Standards Audit Worksheet (RSAW) development, EROMS provides comments.<br>b) CMEP Practice Guides, CCCEC provides comments, as requested.<br>4) Review and respond to stakeholder requests to become a pre-qualified entity to submit compliance implementation guidance.<br>5) Evaluate results and input on stakeholder perceptions and work with NERC management on proposed resolutions. | CCC, CCCEC, EROMS, NERC Management |

| Project Name | Activities | Resource(s) |
|---|---|---|
| | a) Hold "focus group" discussions that are intended to identify opportunities for the ERO Enterprise to drive specific improvements and information sharing across the ERO Enterprise.<br>b) Participate on Align Users Group (CCC Chair, CCC Vice Chair, CCCEC Representative) | |
| **Assistance with Review of ERO documentation for ORCP** | 1) Support review of ERO documentation for ORCP to identify revisions and make recommendations as programs mature.<br>a) Provide additional guidance, as needed, to NERC Staff regarding the entity registration tool: Centralized Organization Registration ERO System (CORES).<br>b) ORCS participates in Functional Mapping Focus Group. | CCC, ORCS |
| **Monitor NERC's adherence to the ROP** | 1) In coordination with NERC Internal Audit under Sections 405/406/506/Various NERC Appendices of the NERC ROP, participate as observers in audits of NERC in the areas of CMEP, ORCP, and Standards development, including review the final audit reports and report to the EWRC on industry observations and submit reporting where necessary. Work with NERC to develop criteria to evaluate the goals, tools, and procedures of each Regional Entity Compliance Monitoring and Enforcement Program to determine the effectiveness of each Regional Entity Compliance Monitoring and Enforcement Program. | CCC, EROMS, NERC Internal Audit |
| **ERO Regional Entity CMEP Audits** | 1) As defined in CCCPP-012, participate as an observer to support RE CMEP audits executed by NERC's Internal Audit and Corporate Risk Management function, consistent with Appendix 4A of the ROP. | CCC, NERC Internal Audit |
| **EWRC Collaboration** | 1) Participate and support EWRC activities and discussions,<br>a) Provide an update of CCC activities at each quarterly EWRC meeting.<br>i) This may include review of results of Stakeholder Perception Report, update of CCC key quarterly activities, annual work plan, any topic requested by the ERWC.<br>b) Provide summary findings related to ERO Stakeholder Perceptions conducted by CCC.<br>2) Participate in the annual ERO risk discussions with NERC Management and provide input into NERC's annual risk assessment, as requested. | CCC Leadership, EWRC and ERO Enterprise Management, NERC Director, Internal Audits |
| **NERC Reliability Issues Steering Committee (RISC) Collaboration** | 1) Provide input to existing risks, mitigation strategies, and emerging risk identification.<br>a) Perform outreach with stakeholders to gather input for emerging risks.<br>2) Participate and support RISC activities and discussions, including Reliability Risk Leadership Summit, provide updates to CCC members. | CCC Leadership, NERC Management |
| **ERO Enterprise Program Alignment** | 1) As noted in the 2017 ERO Alignment Effort, the CCC collaborates with the NERC and the REs, on the ERO Enterprise's Program Alignment, to address alignment in the execution of both CMEP and the ORCP programs. To support the success of CMEP and ORCP, the CCC will<br>a) At NERC's request, assist NERC with screening of information, support further review of reported items, and provide suggested resolutions if warranted. | CCC, CCCEC, NERC Management |

| Project Name | Activities | Resource(s) |
|---|---|---|
| | i) Gather information regarding potential alignment issues.<br>ii) Evaluate nature and extent of the alignment issue.<br>iii) Develop suggested resolution of the issue.<br>iv) Present suggested resolution to the CCC for review and endorsement.<br>v) Communicate suggested resolutions of alignment issue to the CCC to communicate to NERC. | |
| **Support of ERO Effectiveness** | 1) Manage ERO Enterprise stakeholder perception program.<br>a) Consistent with responsibilities outlined in CCCPP-008 (Program for Monitoring Stakeholders Perceptions), lead efforts to soliciting input from industry and the ERO Enterprise on objectives, content, and delivery of assessments of ERO effectiveness related to CMEP and ORCP.<br>b) Evaluate results of assessments and provide recommendations for the ERO Enterprise and the Board.<br>c) Periodically solicit input from the industry, including the MRC.<br>2) Support development efforts for assessments of ERO effectiveness.<br>a) Work with NERC Management and the SCCG to continue to develop the processes between the NERC standing committees to ensure that all NERC committees represent a continuous improvement loop in support of reliability and security – further supporting the Framework to Address Known and Emerging Reliability and Security Risks.<br>3) Act as the hearing body where NERC is the Compliance Enforcement Authority and, as directed by the Board, serve as mediator between NERC and Regional Entities on CMEP disputes.<br>4) Provide stakeholder expertise to support the development and maturation of Align, Secure Evidence Locker and CORES. | CCC, EROMS, NERC Management |
| **Stakeholder Collaboration** | 1) Identify industry stakeholder groups where CCC collaboration will strengthen ERO process and approach.<br>a) Lead CCC task forces, such as the Consistency Reporting Tool Taks Force formed in 2023, that are intended to provide guidance to ensure that CMEP impacts are fully considered in technical analyses being undertaken by other technical committees and the ERO Enterprise more generally.<br>2) Participate in industry outreach as requested with ERO personnel on designated ERO topics.<br>a) Strengthen partnerships with industry forums to work collaboratively toward consistent understanding of ERO Enterprise Programs and improvements to processes to strengthen reliability and security (NATF, NAGF, Regional Compliance Forums, Councils, Committees, etc.). | CCC, Stakeholder Committees |

# Chapter 3: 2024 CCC Work Plan - Deliverables

| Project Name | Activities/Deliverables | Resource | Date |
|---|---|---|---|
| **CMEP and CCC Programs and Procedures** | Review CCC procedures and update as needed per EROMS schedule.<br>In 2024, the reviews included CCCPP-010, the CCC Charter, and EROMS and ORCS Scopes. | EROMS | Q4 |
| | Review CCC Charter, EROMS and ORCS scopes, update as needed. | CCC, EROMS, ORCS | Q4 |
| | Provide input to NERC Internal Audit, if requested. | CCC | Ongoing |
| **Registration Input** | Following anticipated FERC approval of the proposed changes to the NERC Rules of Procedure, ORCS will support NERC, through the ORCG with the NERC IBR Work Plans 2nd year efforts in identifying candidates for GO-IBR and/or GOP-IBR functional registration. ORCS may be requested to provide feedback and assistance during the identification activities. | ORCS | Q4 |
| | Participate in CORES Functional Mapping project and provide feedback, as requested. | CCC, ORCS | Ongoing |
| **Compliance Input** | Review and comment on CMEP Practice Guides, as requested, and work with ERO staff on intended use across Res. | CCCEC | Ongoing |
| | Provide input on the Evidence Request Tool and RSAWs. | EROMS | Ongoing |
| **Enterprise-wide Risk Collaboration** | Provide updates regarding CCC activities, consistent with the EWRC mandate that calls for the EWRC to coordinate with the CCC with respect to the CCC's execution of its responsibilities under applicable FERC orders and the ROP.<br>Share Annual Work Plan and key deliverables, provide findings of ERO Stakeholder Perceptions survey (Q2). | CCC Chair | Quarterly |
| | Support ERO risk assessment framework and provide input on residual risk evaluation as requested. | CCC | Ongoing |
| **ERO Program Alignment** | As requested by NERC, analyze issues and determine the scope and material impact. | CCC, NERC Staff | Ongoing |
| | Perform outreach on Consistency Reporting Tool. | Consistency Reporting Task Force (CRTTF) and NERC Staff | Q2 |
| | Review CCCPP-008 Procedure to update reporting options. | EROMS | Q4 |

| Project Name | Activities/Deliverables | Resource | Date |
|---|---|---|---|
| **Support of ERO Program Effectiveness** | Hold "focused discussions", as outlined in CCCPP-008 (Program for Monitoring Stakeholders Perceptions), to solicit input from industry and the ERO Enterprise on objectives, content, and delivery of assessments of CMEP and ORCP effectiveness. | EROMS | Quarterly |
| | Support ERO development of any additional metrics to measure risk mitigation. (leverage CMEP biennial reports) | CCC | Ongoing |
| | Develop 2023 ERO Stakeholder Perception Feedback Report | EROMS | Q1 |
| | Consistent with the SC/SCCG recommendations, support activities to implement recommendations from 2022 Standards Process Engagement Stakeholder Group (SPESG) proposal. | CCCEC | Ongoing |
| | Participate in and provide feedback to Align Users Group. | CCC Reps | Quarterly |
| **Stakeholder Collaboration** | Consistent with the SC/SCCG recommendations, collaborate with SCCG and ERO leadership to facilitate solutions, enhance program efficiency, effectiveness, and agility. | CCC | Quarterly |
| | Review new or upcoming SARs to help prioritize emerging issues, as needed and work with SCCG to help prioritize workload for the standards committee. | CCC Chair and Vice Chair | Ongoing |

# Chapter 4: Logistics and NERC Budget Requirements for CCC Activities

As part of the ongoing effort to improve effectiveness and efficiency, and to ensure that all CCC members can fully participate, for 2024, the CCC's first quarter meeting will be fully virtual, and the remaining meetings will have a hybrid option.

## CCC Quarterly Meetings (Cost to be determined by NERC and industry)

Assumptions: Four CCC meetings per year, via WebEx or in-person.

- NERC staff attendance
- NERC travel expenses
- Hotel (Conference rooms if applicable – normally hosted at stakeholder locations or NERC offices)
- Food

## CCC Program Audits/Review

In 2024, no audits are planned and no related expenses expected.

## Webex/Conference Calls (Cost to be determined by NERC)

Assumptions: Conference calls, including CCC/Subcommittees NERC Webex or conference calls quarterly.

## Training (Cost to be determined by NERC)

Assumptions: Half-day of hearing training appended to regular CCC meeting at least every three years.

CCC members should have the capability to assist with observation and creation of audit criteria to fulfill responsibilities under the CCC charter to conduct audits of NERC's adherence to the ROP. Learning programs are provided, to those new member participants, ahead of the audit activities and will be conducted as needed.

# Chapter 5: Revision History

## Revision History

| Date | Version Number | Comments |
|---|---|---|
| November xx, 2023 | 1 | CCC Executive Committee Review |
| December 7, 2023 | 2 | CCC Review and Approval |

# Reliability and Security Technical Committee (RSTC) Strategic Plan and Report

## Action
Approve

## Background
In June 2023, the RSTC established a review team to review the 2023 ERO Reliability Risk Priorities Report (RISC Report) and update the RSTC Strategic Plan and RSTC Work Plan Priorities. The review team held a work plan summit in October to review all current and planned work plan items for each RSTC subgroup. The review team updated the RSTC Strategic Plan based on its review of the RISC Report and incorporated RSTC work plan items as appropriate.

## Summary
Shortly after the Board approved the RISC Report, the RSTC convened a small group to conduct the 2-year Strategic Planning Process, which is detailed in Appendix A of the Strategic Plan document. The group identified four strategic priorities, with the recognition of the need to increase awareness of reliability implications, and closer collaboration and coordination with policy makers on emerging energy policy issues.

With respect to emerging strategic risks, the RSTC identified specific focus areas and desired outcomes. Potential risk mitigation steps are left for further investigation by the subcommittees, working groups, and task forces. A complete list of the focus areas is contained in the strategic plan document and illustrated in the graphic below.

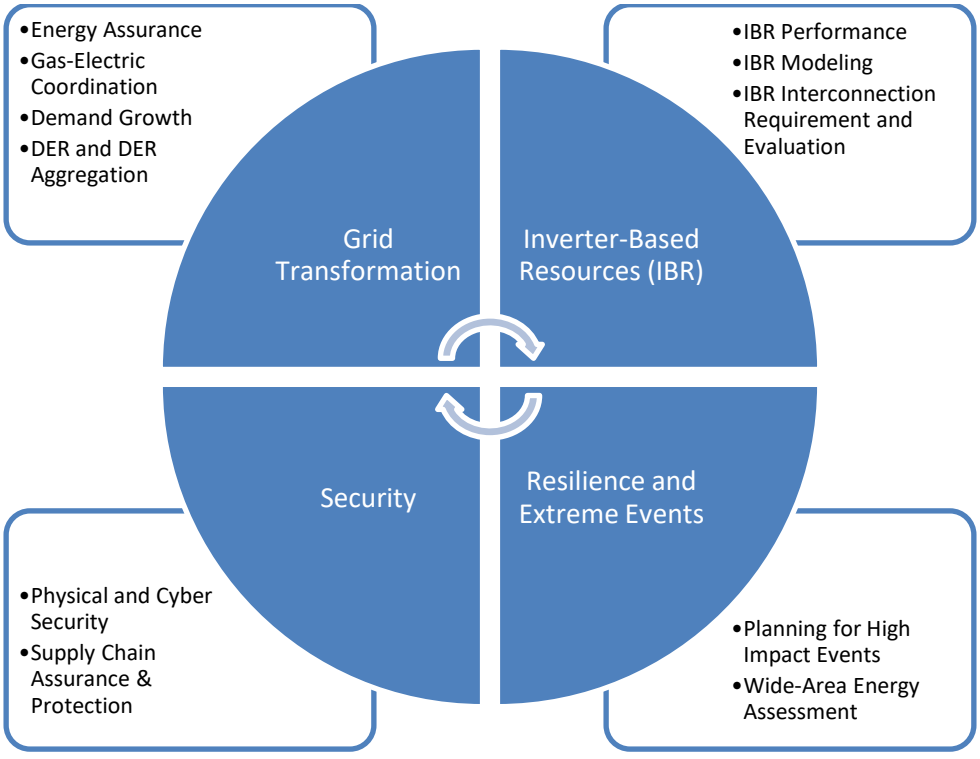



**Figure 1: RSTC Strategic Risk Priorities**

The Strategic Plan was approved by the RSTC during the December 2023 meeting. NERC Staff is presenting the Strategic Plan to the Board for approval at its February 15, 2024, meeting.

## RSTC Highlights

The RSTC held meetings on December 6-7, 2023, via WebEx. During the Meeting, the RSTC approved amendments to the RSTC Charter, Strategic Plan, and the annual sunset review of working groups and task forces.

The RSTC will communicate the strategic plan strategic risks and focus areas to the RSTC subgroup leadership and NERC Staff liaisons. Through an iterative process, (see Figure 1 below) these subgroups will propose to the RSTC specific work plan items intended to mitigate these identified risks. The RSTC will review the work plan items against this strategic plan for alignment and prioritization and approve the work plan items as appropriate.

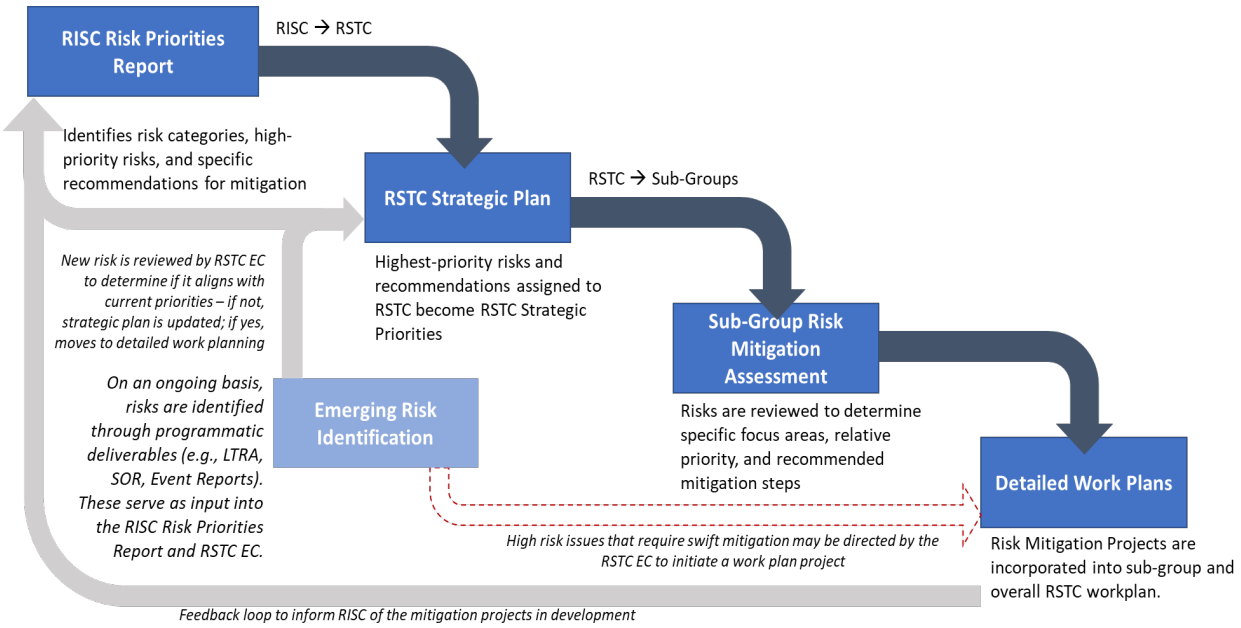



**Figure 2: RSTC Strategic Planning Process Flow Chart**

For 2024, the RSTC will continue to identify risks and risk mitigation activities. The RSTC review team is currently working on identifying high priority work plan items and performing a complete review of the work plan, including prioritization of activities. The RSTC will continue to focus on the strategic risk priorities and mitigation activities identified in the work plan.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Reliability and Security Technical Committee

## ~~2023-~~2024~~-2025~~ Strategic Plan

January ~~2023~~2024

**RELIABILITY | RESILIENCE | SECURITY**

**3353 Peachtree Road NE**
**Suite 600, North Tower**
**Atlanta, GA 30326**
**404-446-2560 | www.nerc.com**

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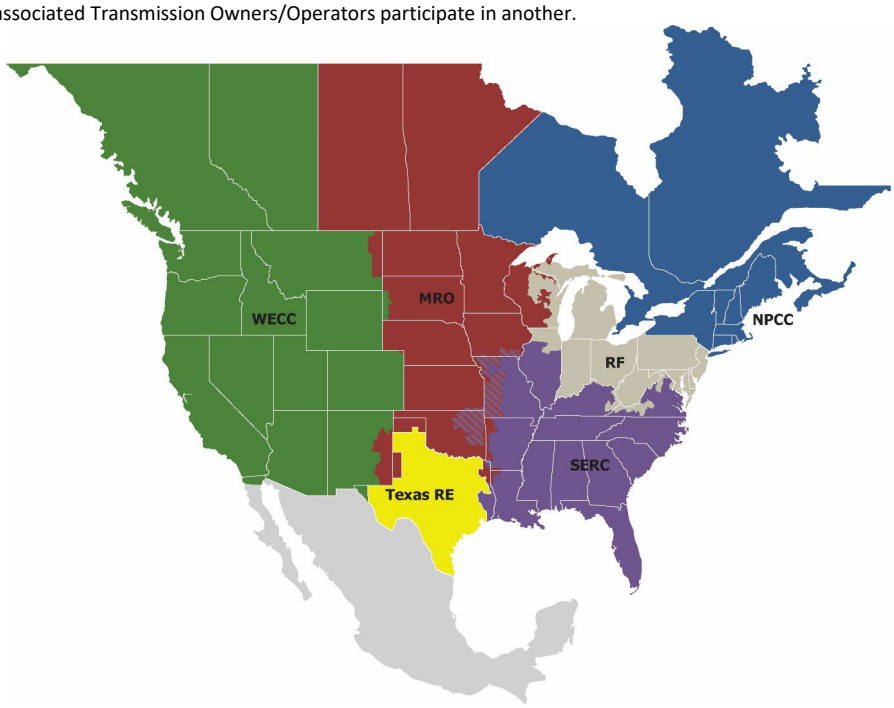
# Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | ~~ReliabilityFirst~~Reliability First |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

## Introduction and Objectives

The NERC Reliability and Security Technical Committee (RSTC) is a stakeholder committee chartered by the NERC Board of Trustees (Board) to proactively support the NERC ERO Enterprise's mission. The RSTC, in accordance with its charter, will develop and maintain a two-year strategic plan and an associated work plan to carry out the functions of the committee:

- Ensure alignment of the strategic work plan with ERO reports and analyses, including the NERC Business Plan and Budget, ERO Enterprise Long-Term Strategy, biennial Reliability Issues Steering Committee (RISC) ERO Reliability Risk Priorities report, State of Reliability report recommendations, Long Term, Seasonal and Special Reliability Assessment recommendations, and ongoing event analysis trends~~;~~.
- Leverage industry technical expertise to provide insights, considerations and educational materials regarding reliability impacts of policy and regulatory decisions.
- Coordinate the objectives in the strategic work plan with the Standing Committees Coordinating Group~~; and,~~.
- ~~Obtain annual NERC Board approval.~~
- Support response to mandates related to BPS reliability (e.g. FERC Order 901[1], ITCS[2]).

This strategic plan guides the functions and core mission of the RSTC, providing a sustainable set of expectations and deliverables for the RSTC to assess and enhance reliability, resilience, and security of the BPS. The RSTC engages in the identification and communication of reliability risks along with potential mitigation strategies. These activities will include close coordination with the RISC as well as taking steps to create industry~~-~~wide awareness. This strategic plan will not remain static throughout a two-year timeframe. Rather, it is crucial that the plan ~~retain~~retains the flexibility to address emerging issues. ~~The RSTC will annually review the goals and specific items or as necessary.~~

This two-year plan, along with its goals and measures, is typically reviewed during the December RSTC meeting, and enhancements to the plan will be made and presented to the NERC Board each year in accordance with the Charter as required to achieve the goal of promoting reliability, resilience, and security.

[1] https://www.ferc.gov/media/e-1-rm22-12-000
[2] https://www.nerc.com/pa/RAPA/Pages/ITCS.aspx

# Executive Summary

Shortly after the Board approved the 2023 ERO Reliability Risk Priorities Report ("2023 ERO Risk Report") the RSTC convened a small group to conduct the 2-year Strategic Planning Process, which is detailed in Appendix A. The group identified four strategic priorities, with the recognition of the need to increase awareness of reliability implications, and closer collaboration and coordination with policy makers on emerging energy policy issues:

(i) Grid Transformation,
(ii) Inverter Based Resources (IBR),
(iii) Resilience and Extreme Events, and
(iv) Security.

Trends in several areas of the electric industry are the primary drivers of these priorities. Policy and economic drivers are shifting the resource mix from large, centralized fossil-fired power stations towards variable energy resources (VER) spread over large geographic areas. Concurrent with this shift, the capacity to provide essential reliability attributes that are inherent in large synchronous generators and critical to managing the reliability of the BPS are decreasing. The inverter-based devices that are expected to mimic and replace these Essential Reliability Services are still being evaluated for their applicability and functionality. Amid this transition, natural gas use for electric generation appears to increase in peak periods but for fewer hours. This is testing both the physical and regulatory interfaces between the electric and gas industries in novel ways. In addition, electric demand is growing in extraordinary ways and with uncertain load profiles. Compounding the risks, the impact of extreme weather events during this transition is challenging system operators in unprecedented ways. Finally, security risks appear to be increasing, and all industry stakeholders must remain vigilant to physical and cyber-attacks and disruption of globally interconnected supply chains.

With respect to the four emerging strategic risks, the RSTC identified specific focus areas and desired outcomes. Potential risk mitigation steps are left for further investigation by the subcommittees, working groups, and task forces (collectively "subgroups")."). A complete list of the focus areas follows:

**Grid Transformation**

i. Energy Assurance: As the grid relies on more just-in-time fueled resources – i.e., natural-gas fired generators and VERs – and traditional, slower starting resources have become less economic to operate, ensuring energy is available and delivered at the right time to serve load is essential.
ii. Gas-Electric Coordination: The gas infrastructure and regulatory framework were not originally designed to support the needs of the electric industry. As the generation fleet transitions to less carbon-intense resources, the use of gas fired resources for base load and peaking needs is increasing during critical times and under certain conditions, and the limitations of this historical framework are becoming more apparent.
iii. Demand Growth: Electrification policies are adding to traditional macroeconomic-driven load growth. Moreover, the characteristics of newly connected loads are not well understood and may present unique reliability challenges. These demands compound the challenges of an evolving generation mix and manifestly increase reliability risk.
iv. Distributed Energy Resources (DER): As the grid shifts toward more decentralized, distribution-connected generation, the reliability attributes also shift to where the generation is connected. This step towards major decentralization could be accompanied with unintended risks. Current Reliability Standard requirements are centrally focused to require performance on the generation side to serve

load. There are no existing requirements that distribution-connected resources perform to maintain the reliability of the bulk power system.

v. Demand and DER Aggregators: For many years, utilities have implemented demand side programs to manage demand on their systems in an aggregated manner. Policy decisions, such as FERC Order 2222 along with technology advances, have also increasingly opened the door to market participation by aggregators of distribution-connected resources and for "third party" aggregators to manage and control their operation. The current and forecasted state of aggregation needs to be fully assessed to ensure we appropriately prioritize and coordinate efforts regarding aggregators of distribution-connected resources and performance, modeling, and visibility of these resources.

**Inverter-Based Resources**

i. IBR Performance: As the first generations of IBRs were deployed and reached a critical mass, issues with their ability to ride through system faults and disturbances became apparent. This has resulted in concerns for grid operators, and there are efforts underway to address the performance of in-service IBRs.

ii. IBR Modeling versus Performance: In addition to the aforementioned operating concerns the nascent industry has lacked standard models used for power flow and grid stability analysis. Additionally, interconnecting utilities have found many device settings of installed IBRs deviate from the models provided.

iii. IBR Interconnection Requirements and Evaluation: IBR numbers are expected to grow over the next decade and exceed the megawatts of synchronous generation in many regions. RSTC and its subgroups are examining the viability of codifying interconnection requirements to address the concerns with ride-through and actual versus modelled performance, plus potentially adding certain reliability services, on a prospective basis.

**Resilience and Extreme Events**

i. Planning for High-Impact Events: Generation performance is correlated with weather, and demand may exhibit nonlinear behaviors under extreme conditions. This necessitates an assessment of risk in planning models including low frequency but highly impactful conditions.

ii. Wide-area Energy Assessments: Short- and long-duration low-frequency, high-impact weather events sometimes extend beyond the boundaries of individual balancing authority areas and can lead to an increase in propagating risks across a wide area. Resource planning and reliability assessments would benefit from joint-regional coordinated action.

**Security**

i. Physical and Cyber Security: External threats have caused damage and disruption to the Bulk Electric System (BES). Unfortunately, threats from lone wolf actors to state-sponsored hackers are expected to increase. DERs and Distribution-Side Aggregators are expanding the current attack surface. Raising awareness of these threat vectors and the extent to which DER aggregators may be following cybersecurity protocols encourages protective actions that mitigate the risk and strengthen the grid.

ii. Supply Chain Assurance and Protection: Today's supply chain is highly globalized to the extent the BPS may not be able to function if supply of certain components is disrupted or weaponized. The risks from globalization are coming into sharp focus with recent geopolitical events. Attention is required to ensure the grid continues to function in the event global supply chains are disrupted.

While the small group debated and identified the strategic risks, it became apparent that the RSTC should undertake a thorough examination of the indicators and metrics used to measure risk. The consensus among the group is that existing metrics sufficiently measure the current state of reliability and may be used to extrapolate trajectories with historical data, but these indicators do not sufficiently measure emerging, novel risks. In early 2024 the RSTC will discuss action to:

- Review current reliability metrics,
- Identify the risks that those metrics are attempting to address,
- Identify risks areas that could materialize in the future and are unique or peculiar to the strategic risks,
- Define leading indicators that may better forecast future risk areas and allow the ERO and stakeholders to proactively mitigate those risks, and
- Identify appropriate pathways to communicate risks and new leading indicators to energy policymakers.

Following Board approval, the RSTC will communicate these strategic risks and focus areas to the subgroup leads. Through an iterative process, these groups will propose to the RSTC specific work plan items intended to mitigate these identified risks. The RSTC will review the work plan items against this strategic plan for alignment and prioritization and approve the work plan items as appropriate. The rest of this document describes the details of the processes used to develop the strategic plan and describes those risks in more detail.

# Chapter 1: Mission, Vision, and Guiding Principles

## Mission

Ensure the reliability and security of the bulk-power system by identifying critical risks and deploying effective and efficient risk mitigations.

## Vision

The RSTC is the premier technical authority on BPS reliability, resilience, and security, and its effectiveness stems from the stakeholder members ~~that~~who command deep technical knowledge, broad industry experience, and a collective duty to ensure the reliability of the bulk-power system.

## Guiding Principles

The following principles serve to guide our practices:

- Coordinate with the RISC on priorities to align the RSTC strategic plan with the ERO's strategic plan.
- Maintain a focus on identification, analyses, and mitigation of existing and emerging reliability, resilience, and security risks.
- ~~Support the Board-approved annual Work Plan Objectives~~
- Continually strive for the development and dissemination of high-quality lessons learned through event analysis (EA), emerging cause code trending, and information sharing.
- Maintain relationships with other NERC standing committees (e.g. support the Standing Committee Coordinating Group), NERC Forums, and industry trade groups (e.g. NATF, IEEE).
- Maintain and enhance reliability, resilience, and security through the pursuit of clear NERC Reliability Standard Authorization Requests, Reliability Standards, Reliability Guidelines, Security Guidelines, Technical Reference Documents, NERC Alerts, Interpretations, lessons learned, and compliance clarifications.
- ~~Maintain high levels of industry specific expertise to provide sound conclusions and opinions on operating, planning and security issues.~~
- Incorporate a planning, operations and security perspective into NERC reports issued to industry.
- Deliver technically sound and accurate analyses, assessments, and recommendations~~;~~.
- Identify critical emerging issues and trends that could potentially have reliability impacts in the near term and long term.
- Ensure the facts are unbiased and not providing an advocacy of policy matters~~;~~.
- Promote coordination effectiveness across the NERC ERO Enterprise~~;~~.
- Ensure continued provision of high levels of expertise, technically sound conclusions, and timely results/deliverables~~;~~.
- Ensure the RSTC structure, processes and procedures, its working relationships with other technical standing committees, ~~-~~its subcommittees, working groups and task forces are focused on the highest priorities for reliability, resilience, and security within the ERO enterprise~~;~~.

## ~~RSTC Strategic Planning Process~~

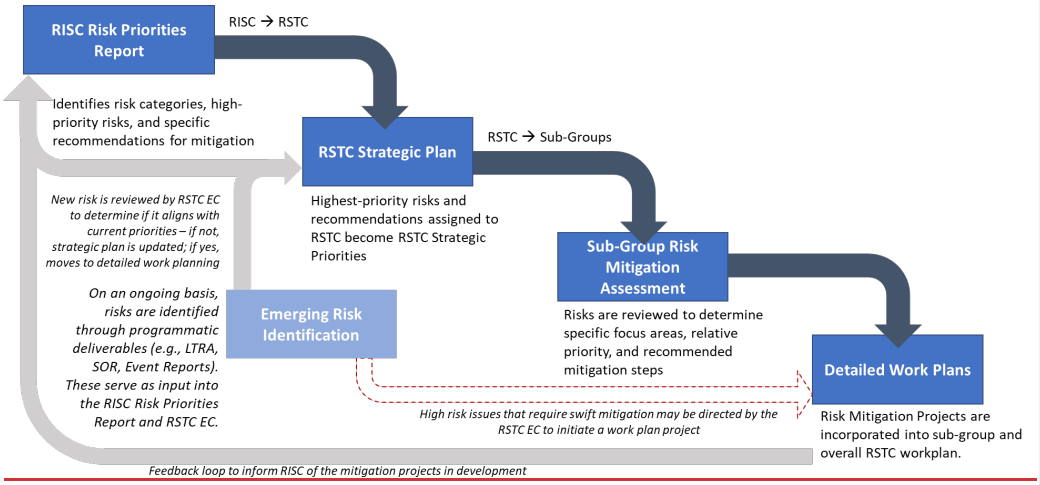
~~The RSTC Strategic Planning Process ensures high priority risks are systematically addressed by the RSTC using a common framework for decision making with broad concurrence, as well as ensuring all committee members and stakeholders have clear expectations on how the RSTC plans to meet its objectives.~~

~~Following the issuance of the RISC report, a Strategic Planning group convenes to conduct the 2-year Strategic Planning Process~~

~~The Strategic Planning Process begins with the latest version of the RISC's Risk Priorities report, which presents the results of strategically defined and prioritized risks, as well as specific recommendations for mitigation. The RSTC provides input into the development of this report and the RISC's risk assessment through a variety of mechanisms, including reliability assessments and event reports.~~

~~The RSTC Strategic Plan (this document) then aligns the highest priority risks and recommendations from the Risk Priorities Report and with the priorities outlined for the RSTC over the next two years. Additional priorities based on high priority emerging risks identified by the RSTC may be included within the 2-year Strategic Plan (as determined by the RSTC's Executive Committee).~~

~~Once all priorities are identified for the RSTC, specific risks are identified and RSTC subgroups determine the recommended mitigation steps. These risk mitigation projects, along with programmatic actions, then comprise the detailed RSTC Work Plan. Many of the identified risks share interdependencies that will be considered in the development of the work plan.~~




**~~Figure 1: RSTC Strategic Planning Process Flow Chart~~**

## RSTC Strategic Plan Role in Risk Mitigation

The RSTC provides expertise in reliability, resilience, and security, and plays a key role in the mitigation of reliability, resilience, and security risks. As identified in the RISC's Framework[3] for Risk Mitigation, the RSTC is responsible for all steps of the framework, including: Risk Identification and Validation, Risk Prioritization, Determination of Risk Remediation/Mitigation, Deploying Risk Remediation/Mitigation, Measure Success, and Monitor Residual Risk. Therefore, the strategic plan includes key activities to support each of these steps.

The Risk Mitigation Framework guides the ERO in the prioritization of risks and provides guidance on the application of ERO policies, procedures, and programs to inform resource allocation and project prioritization in the mitigation of these risks. Additionally, the framework accommodates measuring residual risk after mitigation that enables the ERO to evaluate the success of its efforts in mitigating risk and provides a necessary feedback mechanism for future prioritization, mitigation efforts, and program improvements.

The successful reduction of risk is a collaborative process between the ERO, industry, and the technical committees including the RSTC and the RISC. The framework provides a transparent process using industry experts in parallel with ERO experts throughout the process – from risk identification and deployment of mitigation strategies to monitoring the success of these mitigations.

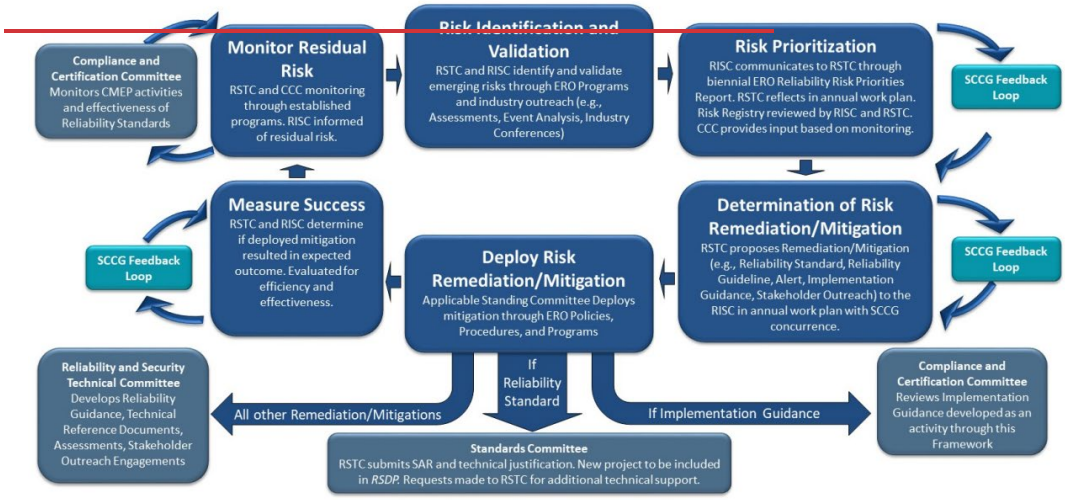



**Figure 2: ERO Mitigation Framework for Known and Emerging Reliability Risks**

The RSTC's Notional Work Plan Process[4] provides a detailed review of each step and how the RSTC supports and actively contributes to the risk mitigation framework. The following table summarizes how the RSTC performs each step and the expected deliverables that support the Risk Mitigation Framework:

[3] https://www.nerc.com/comm/RISC/Related%20Files%20DL/Framework-Address%20Known-Emerging%20Reliabilit-Securit%20%20Risks_ERRATTA_V1.pdf
[4] https://www.nerc.com/comm/RSTC/Documents/RSTC%20Work%20Plan%20Notional%20Process_Approved_Sept_2020.pdf

| Risk Mitigation Framework Steps | RSTC Role | RSTC Deliverable Type |
|---|---|---|
| 1. Risk Identification and Validation | RSTC identifies and validates risks through its performance, event, and future technical analysis and assessments | • Identification and Monitoring<br>▪ Long-Term and Seasonal Reliability Assessments<br>▪ Special Assessments<br>▪ Event and Disturbance Reports<br>▪ State of Reliability Report<br>▪ Other reliability/security indicators, whitepapers, gap assessments |
| 2. Risk Prioritization | RSTC provides support and consulting to the RISC prioritization and risk ranking actions. | |
| 3. Determination of Risk Remediation/Mitigation | RSTC proposes remediation/mitigation | • RSTC Biennial Strategic Plan |
| 4. Deploying Risk Remediation/Mitigation | RSTC develops and deploys remediation/mitigation | • RSTC Work Plan<br>▪ Standard Authorization Requests – SAR<br>▪ Reliability/Security Guidelines<br>▪ Compliance Guidance<br>▪ Reliability and Security Assessments<br>▪ Stakeholder Outreach<br>▪ Technical Reference Document<br>▪ NERC Alert |
| 5. Measure Success | RSTC ensures an approach to measure the effectiveness of the risk remediation/mitigation and deploys it. Measurement approach should be included in the approval of the deployed remediation/mitigation. | • Identification and Monitoring<br>▪ State of Reliability Report<br>▪ Event and Disturbance Reports<br>▪ Special/Specific Reliability and Security Indicators |
| 6. Monitor Residual Risk | RSTC monitors residual risk through established programs. | • Identification and Monitoring<br>▪ Long-Term, Seasonal, and Special Reliability and Security Assessments<br>▪ Event and Disturbance Reports<br>▪ State of Reliability Report<br>▪ Other reliability and security indicators and whitepapers |

~~**Determination of Risk Remediation/Mitigation**~~

~~Technical group, RSTC EC, and Sponsors discuss the reliability/resilience issues, technical justification, and consider possible solutions. Potential outcomes or solutions include deliverables in the RSTC Charter such as white papers, reference documents, technical reports, reliability guidelines, SARs and compliance implementation guidance. Other potential solutions are contained in NERC Rules of Procedure (RoP), ERO Event Analysis Process, NERC Alerts, and other risk management measures. Finally, the RSTC EC authorizes tasks to be added to the RSTC Work Plan (which could include collaboration with other groups), rejects proposed tasks, or refers matter(s) to the RSTC for further discussion.~~

# Chapter ~~3~~2: Strategic Objectives and Priorities

The RSTC's strategic objectives provide a bridge between the RSTC's mission and vision~~,~~ and the annual goals and work plan deliverables needed to achieve them. The strategic objectives of the RSTC provide clear expectations of the goals and deliverables of the committee and its subgroups~~,~~ and are not expected to change often. However, the ~~risk~~strategic priorities and the expected work products may change, as needed. The ~~five~~ strategic objectives of the RSTC are:

1. Drive effective mitigation actions against emerging and established reliability and security risks, specifically targeting ~~risk~~the strategic priorities.
2. Promote and increase stakeholder and regulator engagement and awareness.
3. Learn from events and past performance trends and deploy mitigation.
4. Identify and assess long-term planning and emerging reliability and security risks.
5. Make recommendations and develop solutions that support technology and security integration into BPS planning and operations.
6. Provide general information to a wide audience that highlights reliability and security risks on the bulk power system from significant changes to energy resources and electric loads.

To achieve these objectives, the RSTC uses its subgroups ~~(subcommittees, task forces, and working groups)~~ to develop its work products. The subgroups are organized under three ~~groupings~~categories: Performance Monitoring, Risk Mitigation, and Reliability and Security Assessment.

There are two types of key projects included in the RSTC work plan to support ~~these five~~the strategic objectives:

1. **Programmatic:** Periodic, cyclical~~,~~ or continuous actions, deliverables, and processes that support the identification, prioritization, and monitoring of reliability risks. The RSTC's **Performance Monitoring** and **Reliability and Security Assessment** subgroups primarily serve to support programmatic strategic objectives.
2. ~~Priority~~**Prioritized Risk:** Targeted and focused actions to identify and develop specific reliability risk mitigations. The RSTC's **Risk Mitigation** subgroups primarily serve to support the strategic risk ~~priority~~ mitigation objectives. This also includes emerging risks identified between strategic planning periods (from assessments, disturbance reports, etc.).

## Programmatic

1. **Identify key areas of concern, trends, and emerging reliability issues by periodically assessing system reliability and performance.**

   The RSTC will focus on developing reliability assessments, evaluations, and studies, and extracting insights to identify reliability, resilience, and security risks. By identifying and quantifying emerging ~~these~~ risks, the RSTC is able to craft risk-informed recommendations ~~and~~, provide the basis for actionable risk mitigations~~.~~, and provide education to industry stakeholders and policymakers. The RSTC supports this process primarily through the Reliability Assessment Subcommittee (RAS), Performance Analysis Subcommittee (PAS), and Resources Subcommittee (RS). Primary deliverables include:

   - **Long-Term Reliability Assessment (annually):** 10-year outlook of resource ~~and energy~~ adequacy~~, resource~~ and transmission projections~~, and leading indicators.~~. Emerging reliability and security integration issues are identified.
   - **Seasonal Reliability Assessments (annually):** Summer and winter season operational outlook, projection, and leading indicators.

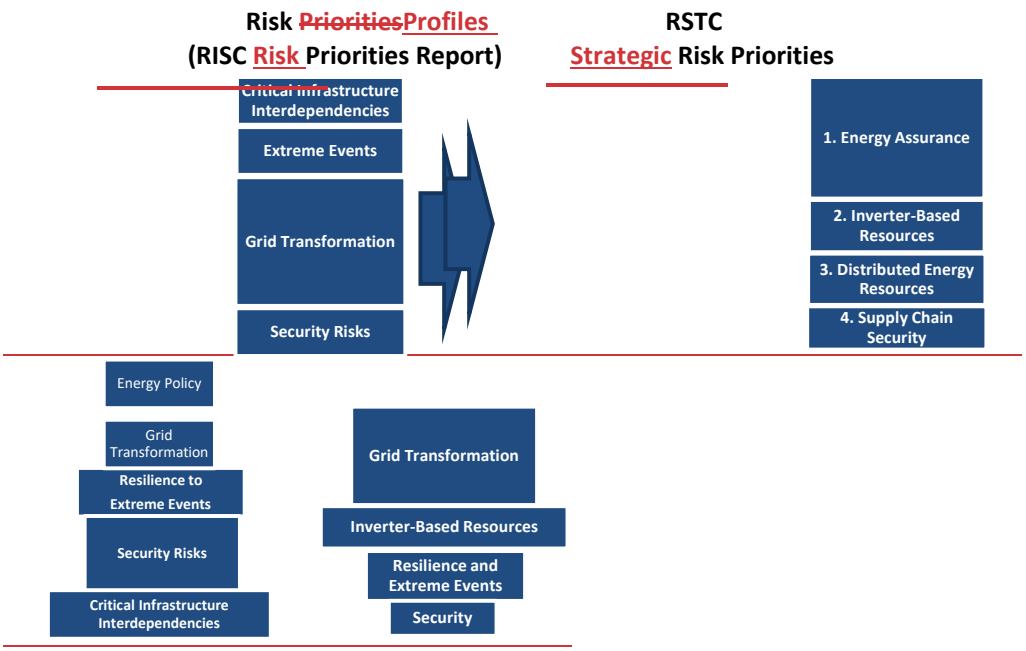
- **Special Reliability Assessments (ad-hoc):** topical technical evaluation of a specified reliability risk.
- **State of Reliability Report (annually):** Historical performance, evaluating 5-year (or longer) trends, indicators, and lagging metrics.
- **Frequency Response Annual Analysis (annually):** Historical performance of frequency response ~~and~~ per a Federal Energy Regulatory Commission (FERC~~), Canadian Federal or Provincial)~~ directive.

2. **Identify lessons learned and trends based on system events and make recommendations for improvement.** The RSTC will focus on event prevention or mitigation by supporting and continually enhancing the ERO's EA program to ensure a comprehensive process, as well as rapidly developing and disseminating lessons learned. Through the Event Analysis Subcommittee (EAS), the RSTC approves any changes to the EA Process and reviews periodic event reports and lessons learned. Any mitigation actions for the ERO to pursue or recommendations for industry can result in additions to the RSTC work plan and, depending on the outcomes of the risk assessment, may be added to the strategic objectives. Primary deliverables include:
   - **Event and Disturbance Reports (*ad-hoc*):** Event reports detail specific details and root causes of BPS events. The EA Process is approved by EAS, and individual reports are published by the ERO and serve as input to the RSTC.
   - **Lessons Learned (*ad-hoc*):** Identified best practice or revealing reliability risk based on an event or group of events. Lessons Learned documents are published by the ERO and serve as input to the RSTC.

3. **Promote and increase stakeholder engagement and awareness of reliability risks.** The RSTC will continue to promote outreach to stakeholder and ~~policy making~~policymaking organizations on reliability, resilience, and security matters through webinars and in-person conferences, workshops, and other mediums to deliver content and reliability messages. The RSTC will leverage strong relationships with industry groups~~,~~ such as ~~NERC's Forums (e.g.~~ NATF, NAGF~~),~~, IEEE, ~~and~~ EPRI etc. as well as regulatory and governmental authorities~~,~~ to target specific technical areas of concern and work together on industry outreach. Primary engagements include:
   - **Reliability Conferences and Workshops (*ad-hoc*):** Convene industry to share and exchange ideas and practices that promote reliability in a variety of technical areas. Conferences can support the RSTC's mission by "creating a forum for aggregating ideas and interests, drawing from diverse industry stakeholder expertise, to support the ERO Enterprise's mission."
   - **Webinars (*ad-hoc*):** Virtual information sharing and exchange provides opportunities to quickly engage industry and achieve our collaboration goals. Webinars serve an integral function of providing insight and guidance by disseminating valuable reliability information to owners, operators, and users of the BPS.

## Priority Risks

Based on the Risk ~~Priorities~~Profiles identified by the RISC, the RSTC has identified four strategic priorities: 1) ~~energy assurance~~Grid Transformation, 2) ~~inverter-based resources~~Inverter-Based Resources, 3) ~~distributed energy resources~~Resilience and Extreme Events, and 4) ~~supply chain security. Cyber security is integral to each of these strategic priorities.~~Security.




Future actions by the RSTC on ~~the~~its Strategic Risk Priorities are focused on the risk mitigation and deployment parts of the Framework for Risk Mitigation~~.~~ as explained in Appendix A. Through this strategic plan, ~~primary~~ subgroups are identified and tasked with identifying risk mitigation solutions (e.g., Reliability Standard, Reliability/Security Guideline) and working with the RSTC Executive Committee (EC) and subgroup sponsors to add the risk mitigation projects to the RSTC Work Plan. The RSTC EC authorizes projects to be added to the RSTC Work Plan (which could include collaboration with other groups), rejects proposed tasks~~,~~ that are not aligned with the prioritized risks, or refers matter(s) to the RSTC for further discussion. ~~-~~For each RSTC Strategic Risk Priority, a 2-Year plan is detailed below indicating ~~strategic direction,~~ specific risks, ~~mitigation approaches,~~desired outcome and ~~the relative priority~~measures of success.

## 1. ~~Energy Assurance~~Grid Transformation

Unassured fuel supplies, including the timing and inconsistent output from ~~variable renewable energy resources, fuel location~~VERs, pipeline deliveries, and ~~volatility~~uncertainty in forecasted load~~,~~ can result in insufficient amounts of energy on the system to serve electrical demand and ensure the reliable operation of the BPS throughout the year.[5] The RSTC and its subgroups will ~~ensure modeling requirements include needed information and data to support valid and accurate modeling and representation to enable reliable operations of BPS, as well as resource and energy planning.~~

~~The RSTC will~~ develop methods, processes, tools, and/or SARs that are needed to address energy security – factoring in modelling requirements, extreme events and critical infrastructure interdependencies.

A part of the grid transformation creates a higher reliance on natural gas resources as a prime flexible resource to ensure reliable operation of the Grid. Coordination between the gas and electric systems will become even more important over the transition. Differences in scheduling requirements, physical capacity constraints, and adequate ramping capability must be addressed to ensure a reliable transition.

Public policy and economics continue to drive the retirement of traditional resources at a time when load growth is beginning to quickly increase in portions of NERC. Technologies, such as electric vehicles, as well as new computing techniques, are driving substantial portions of this load growth. Some of the loads may have unique characteristics or interactions with other grid loads and resources that need to be fully understood to maintain reliability.

In addition, across the industry there has been significant discussion regarding the impact of Distributed Energy Resources and aggregation of demand-side resources. The potential BES reliability impacts need to be assessed to ensure appropriate prioritization of industry resources around this topic.

| ~~RISK FRAMEWORK ACTIONS~~ | | | |
|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | **~~Risk Mitigation Determination~~ Measure of Success** |
| **Energy Assurance**: Insufficient assessment of energy supplies to ensure operational awareness and energy availability. | • Modeling and data sharing requirements<br>• System Operations<br>• ~~Probabilistic resource~~Resource planning | • SAR for Reliability Standards (submitted in 2022)<br>• Supplemental materials developed and disseminated for industry use in performing energy assessments | • ~~Provide technical support to the~~ Standards ~~Drafting Team~~Committee approval of new Reliability Standards<br>• ~~Enhancement to~~RSTC approval / endorsement of Considerations for Performing an Energy Reliability Assessment ~~Process~~, Volume 2 |

[5] https://www.nerc.com/comm/RSTC/ERATF/ERATF%20Energy%20Adequacy%20White%20Paper.pdf

| ~~RISK FRAMEWORK ACTIONS~~ | | | |
|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | **~~Risk Mitigation Determination~~ Measure of Success** |
| | | | • EEA3 trends<br>• Performance during extreme weather conditions<br>• CPS1 trends |
| **Energy Assurance**: Insufficient assessment of energy supplies to evaluate resource requirements in the long-term planning horizon. | • Modeling and data sharing requirements<br>• ~~Probabilistic resource~~Resource planning | • SAR for Reliability Standards (submitted in 2022)<br>• Work on Long-Term Planning Horizon Standards expected to begin in 2024<br>• Supplemental materials developed & disseminated for industry use in performing energy assessments | • ~~Provide technical support to the Standards Drafting Team~~<br>• ~~Enhancement to~~Standards Committee approval of new Reliability Standards (separate effort and SAR from Operations Planning Standards)<br>• RSTC approval / endorsement of Considerations for Performing an Energy Reliability Assessment ~~Process~~, Volume 2<br>• EEA3 trends<br>• CPS1 trends |
| **Gas-Electric Coordination:** Increased dependence on natural gas as fuel for flexible and dispatchable resources | • Resource Planning<br>• Modeling and data sharing requirements<br>• System Operations | • Support WSE Joint Inquiry Report recommendations<br>• Support DOE/NERC balancing study<br>• Proactively identify regions and scenarios of elevated risk | • Reduce risk and actual occurrences of fuel-related generation outages due to lack of pipeline gas |

| ~~RISK FRAMEWORK ACTIONS~~ | | | |
|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | ~~Primary Subgroups~~Desired Outcome | ~~Risk Mitigation Determination~~ Measure of Success |
| **Demand Growth**: Accelerated demand growth | • Reliability Assessment<br>• Resource Planning | • Methods to educate Policy Makers are effectively communicating reliability risks associated with the evolving resource mix<br>• Methods / standards in place to ensure an adequate level of essential reliability services are maintained throughout the transition | • SRA/WRA<br>• LTRA<br>• State of Reliability |
| **Demand Growth**: New loads may have unique characteristics which could present reliability concerns | • Load Modeling<br>• System Operations<br>• Transmission Planning | • Unique characteristics of new loads are identified & understood.<br>• Viable solutions to address reliability concerns of new load characteristics are identified and documented. | • State of Reliability |
| **Distributed Energy Resources:** High penetration of DER may pose a reliability risk | • Identify specific reliability risks<br>• Load forecasts<br>• Ride-through | • Complete assessment of existing and expected penetration of Distributed Energy Resources and identification of associated reliability risks | ▪ LTRA<br>▪ Event Analysis |

| | | | |
|---|---|---|---|
| **Demand and DER Aggregation:** Increasing aggregation of demand side resources may pose reliability and security risks | • Identify specific aggregation operating modes | • Complete assessment of existing and expected activity of demand side aggregation of distribution-connected resources and identification of associated reliability risks<br>• Evaluate cybersecurity, back-up control, essential reliability service, dispatchability, and reliable integration of DER aggregators.<br>• Identify performance, modeling and data sharing requirements for planning and operating the BES | ▪ LTRA<br>▪ Event Analysis |

## 2. Inverter-Based Resources

The ~~electric~~bulk power ~~grid~~system in North America is undergoing a significant transformation in technology, design, control, planning, and operation. These changes are occurring more rapidly than ever before. Particularly, technological advances in ~~inverter-based resources~~IBRs are having a major impact on generation, transmission, and distribution systems. The speed of this change continues to challenge grid planners, operators, and protection engineers. Implemented correctly, inverter-based technology can provide significant benefits for the BPS; however, events have shown that the new technology can introduce significant risks if not integrated properly. ~~Further attention is needed to settings of controllable devices, protective relays, remedial action schemes, and power electronics installed to stabilize the system. FERC also published two issuances in November of 2022 pertaining to inverter-based resources and their reliable integration into the BPS.~~

The ERO has established a strategy that outlines steps NERC and the Regional Entities will take to mitigate risks associated with the integration of large amounts of IBR.[6] The RSTC will ~~support this strategy~~drive improvements in the performance of IBRs by focusing on the improvement of IBR interconnection, planning studies, and operations, as well as staying abreast of new inverter technologies and risks. ~~Over the next two years,~~Communicating risk and mitigation measures across the ~~RSTC~~industry will be ~~focused on determining the risk mitigations for some risks, while developing and deploying risk mitigations for others~~a critical component of this strategy to enhance IBR performance.

| ~~RISK FRAMEWORK ACTIONS~~ | | | | |
|---|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | ~~Primary Subgroups~~Desired Outcome | ~~Risk Mitigation Determination~~ Measure of Success | |
| ~~Insufficient or inaccurate modeling, data, and/or study requirements to ensure adequate planning, protection, and operation of the BPS~~ | ~~• Modeling and data sharing requirements~~<br>~~• Systemic modeling errors in positive sequence dynamic models~~ | ~~IRPS~~<br>~~EAS~~<br>~~PAS~~<br>~~RTOS~~<br>~~SPCWG~~<br>~~RAS~~<br>~~RS~~<br>~~ERATF~~<br>~~SITES~~ | ~~• Reliability Guideline~~<br>~~• SAR~~ | ~~• Reliability Guidelines~~<br>~~• Interconnection Studies Guideline~~<br>~~• MOD-032 action plan~~<br>~~• Technical support to Standards Drafting Teams~~<br>~~• EMT Modeling SDT (submitted 2022)~~<br>~~• PRC-024 SDT~~ |

[6] https://www.nerc.com/comm/Documents/NERC_IBR_Strategy.pdf

| ~~RISK FRAMEWORK ACTIONS~~ | | | | |
|---|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | **~~Risk Mitigation Determination~~ Measure of Success** | |
| ~~Insufficient evaluation of the potential impacts of IBRs by planning authorities~~ | ~~• Long-term planning studies~~ | ~~IRPS~~ | ~~• N/A~~ | ~~• Technical support to Standards Drafting Teams~~<br>~~• EMT Modeling SDT (submitted 2022)~~<br>~~• Reliability Guidelines~~<br>~~• EMT Modeling (2023)~~ |
| IBR Performance | • System Operations<br>• Event Analysis | • IBR ride-through of faults | • ~~Insufficient evaluation~~Event Analysis Process<br>• State of ~~the potential impacts of IBRs by~~ Reliability ~~Coordinators~~Report<br>• Summer and ~~Balancing Authorities~~Winter Reliability Assessments<br>• Long-Term Reliability Assessment | |
| ~~Insufficient interconnection requirements or inability to enforce interconnection requirements for IBRs~~ | ~~• Inaccurate models and insufficient studies for IBR interconnections~~<br>~~• Abnormal performance issues with IBRs~~ | ~~IRPS~~<br>~~RS~~ | ~~• N/A~~ | ~~• SAR for Reliability Standard~~<br>~~• FAC-001/FAC-002 SAR (2023)~~ |

| ~~RISK FRAMEWORK ACTIONS~~ | | | | | |
|---|---|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | | | **~~Risk Mitigation Determination~~ Measure of Success** |
| | | | | | |
| ~~Enhancements needed for identification of IBR events~~IBR Performance: Monitoring | • Event analysis | ~~IRPS~~<br>~~RS~~<br>• Identify and study Events involving IBR performance | | | • ~~Gap analysis~~Event Analysis Process<br>• State of ~~emerging risks not addressed by~~ Reliability ~~Standards~~Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |
| IBR Modelling versus Performance | • ~~Need for electromagnetic modeling~~ Modeling and Data Sharing<br>• Long-term planning studies ~~for IBRs~~<br>• Event Analysis | • ~~IBR modeling and studies~~ IBRs perform as modeled, or actual IBR performance is modeled in planning. | ~~IRPS~~ | | • Event Analysis Process<br>• State of Reliability ~~Guidelines~~Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |
| IBR Interconnection Requirement and Evaluation | • Modeling and Data Sharing | • ~~Inadequate analysis of abnormal performance issues by~~ | • ~~Post-event performance validation~~ | ~~IRPS~~<br>~~RS~~<br>~~PAS~~ | • ~~SAR for~~Event Analysis Process<br>• State of Reliability ~~Standard~~ |

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| **Identified Specific Risks** | **Technical Areas of Focus** | ~~Primary Subgroups~~Desired Outcome | | | ~~Risk Mitigation Determination~~ Measure of Success | |
| | | ~~IBR GOs~~Impact of IBR Interconnection is fully understood and modelled before operating | | | ~~(submitted in 2022)~~Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment | |
| ~~Growing need for grid forming inverter technology~~ | ~~• Changing resource mix~~<br>~~• Grid transformation~~ | ~~IRPS~~ | | | ~~• White Paper~~ | ~~• White Paper~~<br>~~• Grid Forming for BESS Paper~~ |
| ~~Need for enhanced commissioning practices~~ | ~~• Plant commissioning~~<br>~~• Interconnection process~~ | ~~IRPS~~<br>~~RS~~ | | | ~~• White Paper~~ | ~~• White Paper~~<br>~~• Commissioning White Paper~~<br>~~• SAR for Reliability Standard~~<br>~~• FAC 001/FAC 002 SAR (2023)~~ |
| ~~Emerging IBR reliability risks~~ | ~~• Changing resource mix~~<br>~~• Grid transformation~~ | ~~IRPS~~ | | | ~~• White Paper~~ | ~~• White Paper~~<br>~~• Gap analysis of emerging IBR issues not addressed by NERC standards~~ |

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### 3. ~~Distributed Energy Resources~~Resilience and Extreme Events

~~Distributed energy resources (DERs) levels are rapidly growing across many areas of North America and are impacting how the BPS is planned, designed, and operated. This influx of DERs presents potential benefits as well as challenges for grid reliability, resilience, and security as they are potentially impactful users of the~~

~~BPS. While each individual DER is distribution-connected, the priority is focused on the reliable operation of the BPS, and the potential impact of aggregated DERs.~~

~~The ERO is proactively identifying and addressing BPS reliability impacts with increasing levels of DERs, and the RSTC will support this effort through collaborative engagement with industry stakeholders to drive risk mitigation activities—specifically, DER modeling capabilities, studies incorporating DER impacts to the BPS, operational impacts of DERs to the BPS, and regulatory considerations related to DERs. Further, the RSTC will focus on approaches for evaluating the potential impacts and benefits of energy storage, hybrid resources, aggregated DERs, and other emerging technologies. Over the next two years, the RSTC will be focused on determining the risk mitigations for some risks, while developing and deploying risk mitigations for others.~~

Recent cold weather events (e.g. Polar Vortices, Winter Storms Elliot and Uri), heat events (e.g. 2020 California event and British Columbia's heat dome), and localized natural events (e.g. hurricanes, derechos and ice storms) represent an increase in extreme natural events that have an impact on the resilience and reliability of the BPS. The RSTC and its subgroups will ensure modeling requirements include new approaches to adequately assess risks from low-frequency, high-impact events, including wide-area impacts to enable reliable operations of the BPS, and improve resource and energy planning.

The RSTC will develop methods, processes, tools, and/or SARs that are needed to address system resiliency and reliability during extreme events.

| ~~RISK FRAMEWORK ACTIONS~~ | | | | | |
|---|---|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | ~~Primary Subgroups~~Desired Outcome | | ~~Risk Mitigation Determination~~Measure of Success | ~~Develop and Deploy Risk Mitigation~~ |
| ~~Insufficient modeling, data, and/or study requirements to ensure adequate planning, protection, and operation of the BPS~~ | ~~• data collection~~<br>~~• modeling tools~~<br>~~• model verification~~<br>~~• modeling usage~~ | ~~SPIDERWG~~<br>~~EAS~~ | | ~~• N/A~~ | ~~• SAR for Reliability Standard~~<br>~~• MOD-031/MOD-032~~<br>~~• PRC-006~~ |
| ~~Insufficient evaluation of the potential impacts of IBR by planning authorities~~**Planning for High-Impact Events**: | • Load Forecasting<br>• Probabilistic Assessment | ~~SPIDERWG~~<br>• ~~EAS~~ Develop new approaches in ERO | • ~~N/A~~ | • Event Analysis Process<br>• State of Reliability ~~Guideline~~ Report<br>~~• Planning Studies (2023)~~<br>~~• Balancing (2024)~~<br>• ~~SAR for~~Summer and Winter Reliability ~~Standard~~Assessments | |

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| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | | | | **~~Risk Mitigation Determination~~Measure of Success** | **~~Develop and Deploy Risk Mitigation~~** |
| Assess expected performance of the bulk power system during extreme events | • Energy Assessment<br>• Model Verification<br>• Transmission Planning ~~Studies~~<br>• ~~Design Criteria~~<br>• ~~Operations Planning~~<br>• | reliability assessments to adequately assess impacts of extreme events.<br>• Leverage existing GridEx events to assess readiness from a confluence of extreme weather and cyber events. | | | | • ~~FAC-001/FAC-002~~Long-Term Reliability Assessment<br>• Special Assessment<br>• | |
| **Wide-Area Energy Assessment**: Assess expected performance of the bulk power system during extreme | • Energy Assessment<br>• Probabilistic Assessment<br>• Model Verification | • ~~Insufficient BPS situational awareness to determine operat~~ | • ~~T-D Interface~~<br>• ~~Aggregators~~<br>• ~~Protection Systems~~ | ~~SPIDERWG~~<br>~~EAS~~ | • ~~White paper on DER Aggregator (2023)~~<br>• ~~White paper on~~ | • ~~SAR for~~Summer and Winter Reliability ~~Standard~~Assessments<br>• ~~EOP-005~~<br>• ~~BAL-003~~<br>• ~~TOP-001/002~~<br>• ~~TOP-003~~ | |

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| **Identified Specific Risks** | **Technical Areas of Focus** | **~~Primary Subgroups~~Desired Outcome** | | | | **~~Risk Mitigation Determination~~Measure of Success** | **~~Develop and Deploy Risk Mitigation~~** |
| events involving neighboring regions | • Transmission Planning | ~~ing state, reserve and other operational requirements, and maintain operational control.~~Enhancement to Reliability Assessment Process to include Wide-Area Energy Assessment Capabilities<br>• Develop new approaches in ERO reliability assessments to adequately | ~~• Decentral Operation~~<br>~~• Security~~<br>• | | ~~DER Security Vulnerabilities (2023)~~<br>~~• White paper on Communication and Coordination (2023)~~<br>• | • ~~TOP-010~~Long-Term Reliability Assessment<br>~~•~~• Special Assessment | |

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| ~~RISK FRAMEWORK ACTIONS~~ | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Identified Specific Risks** | **Technical Areas of Focus** | ~~Primary Subgroups~~Desired Outcome | | | | ~~Risk Mitigation Determination~~Measure of Success | ~~Develop and Deploy Risk Mitigation~~ |
| | | assess wide-area energy risks.<br>• Conduct special assessments of wide-area extreme event impacts.<br>• Sponsor joint regional reliability assessments that could occur from extreme weather events. | | | | | |

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## 4. ~~Supply Chain~~ Security

Exploitation of ~~cyber~~ security risks could arise from a variety of external and/or internal sources. Additionally, the operational and technological environment of the electrical grid is evolving significantly and rapidly and increasing the potential cyberattack surface. Sources of potential exploitation include increasingly sophisticated attacks by nation-state, terrorist, and criminal organizations. Vulnerability to such exploits is exacerbated by insider threats, poor cyber hygiene, supply-chain considerations, and dramatic transformation of the grid's operational and technological environment. Supply chains, specifically, are a targeted opportunity for nation-state, terrorists, and criminals to penetrate organizations without regard to whether the purchase is for information technology, operational technology, software, firmware, hardware, equipment, components, and/or services.

Supply chain risk management and the threats from components and sub-components developed by potential foreign adversaries should continue to be addressed by NERC and industry with evaluation of CIP-013 standard for any needed improvements. Over the next two years, the RSTC will be focused on determining the risk mitigations.

| Identified Specific Risks~~RISK FRAMEWORK ACTIONS~~ | Technical Areas of Focus | | | Desired Outcome | Measure of Success |
|---|---|---|---|---|---|
| Physical & Cyber Security:~~Identified Specific Risks~~ | • Distributed Energy Resources~~Technical Areas~~<br>• Demand Side Aggregators<br>• Integration of ~~Focus~~new technology | ~~Primary Subgroups~~ | ~~Risk Mitigation Determination~~ | • ~~Develop and Deploy Risk Mitigation~~Improved awareness of and resistance to potential attacks | ▪ State of Reliability<br>▪ Event Analysis |
| Supply Chain Assurance & Protection:<br>Inadequate supply chain security can disrupt, infiltrate, and expose OT systems to unauthorized control. | • Open-Source Software<br>• Provenance<br>• Risk Management Lifecycle<br>• Secure Equipment Delivery<br>• Vendor Risk Management<br>• Cloud Computing<br>• Vendor Incident Response | ~~SCWG~~ | | • Whitepaper: NERC Standards Gap Assessment<br>• Coordinate with NATF and NAGF for supply chain evaluation activities | ▪ SAR for ~~Reliability Standard~~Supply Chain Standards<br>▪ ~~CIP-013~~Evaluation of the security of the global supply chain and identification of critical components with limited availability<br>▪ |

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| Identified Specific Risks~~RISK FRAMEWORK ACTIONS~~ | Technical Areas of Focus | | Desired Outcome | Measure of Success |
|---|---|---|---|---|
| | • Supply Chain Procurement | | | |

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# Chapter 43: Primary Subgroup Strategic Direction

In the table below, the RSTC's primary subgroups (those directly under the RSTC) each play a role in meeting the objectives and priorities of the RSTC. To provide additional clarity and direction, strategic direction that aligns with the RSTC's strategic priorities, in addition to what is identified in the scope of the subgroup, is provided below:

| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| **Event Analysis Subcommittee (EAS)** | Identification<br>Monitoring | ○ ~~Energy Assurance~~Grid Transformation<br>○ Inverter-Based Resources<br>○ ~~Distributed Energy Resources~~Resilience and Extreme Events<br>• | • ~~Identification of event trends related to inverter-based resources, DERs, and other "faint signals" that may be emerging from continuing system transformation.~~ |
| **Performance Analysis Subcommittee (PAS)** | Identification<br>Monitoring | ○ ~~Energy Assurance~~Grid Transformation<br>○ Inverter-Based Resources<br>○ ~~Distributed Energy Resources~~ Resilience and Extreme Events | • ~~Identification of trends related to inverter-based resources, DERs, and other "faint signals" that may be emerging from continuing system transformation.~~ |
| **Real Time Operating Subcommittee (RTOS)** | Identification<br>Monitoring | ○ ~~Energy Assurance~~Grid Transformation<br>○ Inverter-Based Resources<br>○ ~~Distributed Energy Resources~~Resilience and Extreme Events | ~~• Provide a forum for coordinating system operating procedures in all four Interconnections, including:~~<br>~~• Coordinate operating Reliability Standard implementation to promote consistency across the Interconnections.~~<br>~~• Prepare for the upcoming operating peak demand season.~~<br>~~• Review significant system disturbances and abnormal transaction~~ |

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| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| | | | ~~curtailments, or others as requested by RTOS, for "lessons learned".~~<br>~~• Review Interconnection frequency events at each meeting.~~<br>• ~~Provide feedback and guidance on matters relating to real-time challenges that DER activity presents grid operators~~ |
| **Synchronized Measurement Working Group (SMWG)** | Monitoring | ○ Grid Transformation<br>•○ Inverter-Based Resources<br>~~• Distributed Energy Resources~~ | ~~• Support any data collection or analysis of power system performance following selected events and significant disturbances. Coordinate with other NERC groups such as the Event Analysis Subcommittee and the System Analysis and Modeling Subcommittee, as applicable.~~<br>• |
| **Resources Subcommittee (RS)** | Identification<br>Monitoring | ○ Grid Transformation<br>•○ Inverter-Based Resources | • ~~Providing industry leadership and guidance on matters relating to balancing resources and demand issues as well as resulting issues related to interconnection frequency.~~ |
| **Energy Reliability Assessment ~~Task Force (ERATF~~Working Group (ERAWG)** | Determining<br>Deploying<br>Measuring | •○ ~~Energy Assurance~~Grid Transformation<br>•○ Inverter-Based Resources<br>•○ ~~Distributed Energy Resources~~Resilience and Extreme Events | ~~• Coordinate developments of energy reliability assessment activities with industry working groups and other RSTC working groups~~<br>~~• Engage industry research and development organizations to validate the technical foundation(s) and development of the tool(s), metrics, and methods~~ |

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| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| | | | • ~~Coordinate studies and plans with adjacent Balancing Authorities to identify enhanced collaborative regional support~~<br>• ~~Support standard drafting team~~<br>• |
| **Reliability Assessment Subcommittee (RAS)** | Identification<br>Monitoring | ○ ~~Energy Assurance~~Grid Transformation<br>○ Inverter-Based Resources<br>○ Resilience and Extreme Events~~Distributed Energy Resources~~ | • ~~Support the annual review of each Assessment Area's long-term and short-term resource adequacy plans. This includes:~~<br>  • ~~Identifying and monitor the key issues, risks, and uncertainties that may impact or have the potential to impact BPS reliability;~~<br>• ~~Coordinating timely submittals of Assessment Area narratives and responses to questions developed by NERC with support from the RAS.~~ |
| **Security Integration and Technology Enablement Subcommittee (SITES)** | Determining<br>Deploying<br>Measuring | • ~~Inverter-Based Resources~~<br>○ ~~Distributed Energy Resources~~Grid Transformation<br>○ ~~Supply Chain~~ Security | • ~~Provide guidance to industry with recommendations for cyber and physical security practices, emerging technology solutions (e.g., cloud computing, virtualization), and approaches to appropriately secure operational technology systems~~ |
| **6 GHz Task Force (6GTF)** | Determining<br>Deploying<br>Measuring | ○ ~~Energy Assurance~~Grid Transformation | • ~~Information that can be used for a range of audiences that describe potential emerging risks and possible solutions to address these risks.~~ |

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| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| **Electric-Gas Working Group (EGWG)** | Determining<br>Deploying<br>Measuring | ~~•~~○ ~~Energy Assurance~~Grid Transformation<br>○ Resilience and Extreme Events | ~~• Author guidelines, white papers, compliance guidance, etc. in support of natural gas disruption considerations and risks that are applicable to all regions and could extend to be inclusive of all fuel sources.~~<br>• |
| ~~**EMP Working Group (EMPWG)**~~ | ~~Determining~~<br>~~Deploying~~<br>~~Measuring~~ | ~~• Energy Assurance~~ | ~~• The EMPWG will serve as a stakeholder forum for focusing on HEMP from a transmission planning and system analysis perspectives. Some of the primary focuses of EMPWG will be data collection, modeling practices that are to determine the BPS expectations for an EMP event.~~ |
| **Facility Ratings Task Force (FRTF)** | Determining<br>Deploying<br>Measuring | ~~•~~○ ~~Energy Assurance~~Resilience and Extreme Events | ~~• The RSTC, in its role serving as~~<br>~~• the technical expertise and executing the collaborative role with RISC to prioritize efforts related to BES risk response, will delegate responsibility to the FRTF to carry out activities to:~~<br>~~▪ Provide information to industry on the issues,~~<br>~~▪ Support industry readiness and success on this topic~~<br>• |
| **Inverter-Based Resource Performance Subcommittee (IRPS)** | Determining<br>Deploying<br>Measuring | ~~•~~○ Inverter-Based Resources | ~~• Develop and maintain Reliability Guidelines and/or SAR(s) to address:~~<br>~~▪ Frequency and voltage ride-through characteristics of~~ |

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| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| | | | ~~inverter-based resources.~~<br>• ~~Review and document recommended delays for the lowest levels of frequency to ensure transient/distorted waveform "ride through".~~<br>• ~~Explore the development of a performance-based NERC Reliability Standard that clearly addresses the control of inverter-based resources, not to be confused with the protective relay functions as specified in PRC-024-2.~~<br>• ~~More clearly understand the potential limitations in early generation inverter technology to meet the proposed performance characteristics that support BPS reliability. Identify the extent to which these inverters may be modified to support BPS reliability, and articulate the limitations that may exist with today's inverter-based resource (particularly solar PV) fleet.~~<br>• ~~Study the impacts that inverter momentary~~ |

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| Subgroup | ~~Risk Framework~~ Focus | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|
| | | | ~~cessation (momentarily cease active power output) for voltage excursions could have on BPS reliability. Recommend performance characteristics related to momentary cessation, including the expected voltage levels and restore output characteristics.~~<br>• |
| **Load Modeling Working Group (LMWG)** | Determining<br>Deploying<br>Measuring | ~~Energy Assurance~~Grid Transformation | ~~• Formulate and guide the NERC vision and activities to promote the advancement and utilization of dynamic load models and modeling practices.~~<br>~~• Establish guidelines and technical reference documents related to dynamic load modeling practices, including explanations of existing dynamic load models and their structure, data sets, and parameter derivation.~~<br>• |
| **Security Working Group (SWG)** | Determining<br>Deploying<br>Measuring | ~~Supply Chain~~ Security | ~~• Provide timely technical reports to RSTC on CMEP matters related to cyber and physical security~~<br>~~• Develop materials from organized industry activities (such as tabletop exercises) led by or in collaboration with the SWG~~ |

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| Subgroup | ~~Risk Framework~~ Focus | | Related Strategic Prioritized Risk ~~Priorities~~ | ~~Additional or Focused Key Actions to Support Strategic Risk Priorities~~ |
|---|---|---|---|---|
| | | | | • ~~Review lessons learned published by NERC where the RSTC seeks additional industry feedback to help determine whether additional guidance to industry is necessary~~<br>• |
| **Supply Chain Working Group (SCWG)** | Determining<br>Deploying<br>Measuring | | ○ ~~Supply Chain~~ Security | • ~~Development of Security Guidelines and metrics to provide guidance on Supply Chain issues or concerns.~~ |
| **System Planning Impacts from Distributed Energy Resources Working Group (SPIDERWG)** | Determining<br>Deploying<br>Measuring | • ~~Inverter-Based Resources~~<br>• ~~Distributed Energy Resources~~<br>• | ○ ~~NERC SPIDERWG will serve as a stakeholder forum for focusing on DER from a transmission planning and system analysis perspectives with primary focuses on DER data collection, modeling practices, model improvements, and steady-state and dynamic simulation assessments.~~Grid Transformation<br>○ DER<br>• | |
| **System Protection and Control Working Group (SPCWG)** | Determining<br>Deploying<br>Measuring | | ○ Inverter-Based Resources<br>• ~~Distributed Energy Resources~~ | • ~~Provide subject matter expertise for NERC Reliability Standards and technical guidelines, including, but not limited to, the following:~~<br>▪ ~~Protection and control systems, including local and wide-area applications, and synchrophasor applications.~~<br>▪ ~~Remedial Action Schemes (RAS).~~<br>• ~~Power system monitoring~~ |

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# ~~Appendix A:~~ RSTC Strategic Planning Process

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The RSTC Strategic Planning Process ensures high priority risks are systematically addressed by the RSTC using a common framework for decision-making with broad concurrence, as well as ensuring all committee members and stakeholders have clear expectations on how the RSTC plans to meet its objectives.

Following the issuance of the RISC report, a Strategic Planning group convenes to conduct the 2-year Strategic Planning Process

~~The Strategic Planning Process begins with the latest version of the RISC~~ Risk Priorities report, which presents the results of strategically defined and prioritized risks, as well as specific recommendations for mitigation. The RSTC provides input into the development of this report and the RISC's risk assessment through a variety of mechanisms, including reliability assessments and event reports.

The RSTC Strategic Plan (this document) then aligns the highest-priority risks and recommendations from the Risk Priorities Report and with the priorities outlined for the RSTC over the next two years. Additional priorities based on high-priority emerging risks identified by the RSTC may be included within the 2-year Strategic Plan (as determined by the RSTC's Executive Committee).

Once all priorities are identified for the RSTC, specific risks are identified and RSTC subgroups determine the recommended mitigation steps. These risk mitigation projects, along with programmatic actions, then comprise the detailed RSTC Work Plan. Many of the identified risks share interdependencies that will be considered in the development of the work plan.

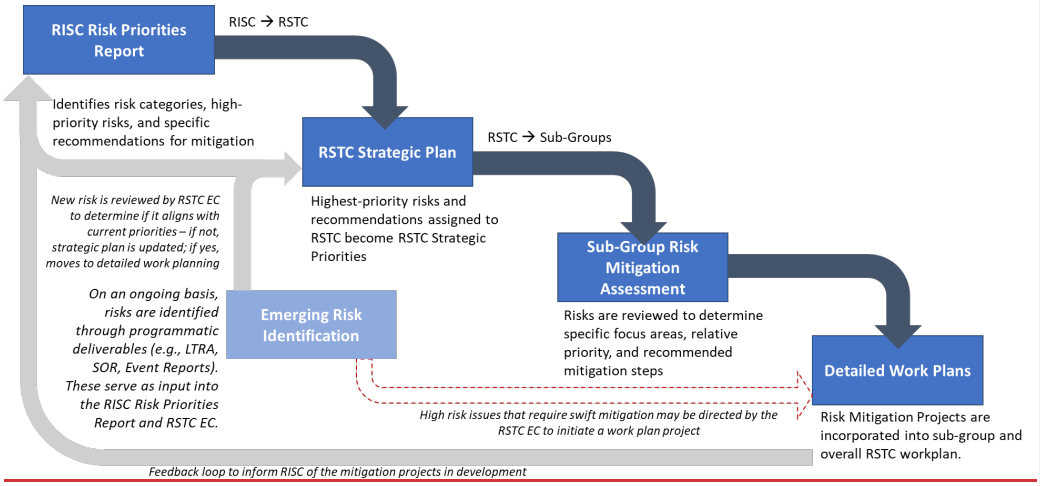


**Figure 1: RSTC Strategic Planning Process Flow Chart**

## RSTC Strategic Plan Role in Risk Mitigation

The RSTC provides expertise in reliability, resilience, and security, and plays a key role in the mitigation of reliability, resilience, and security risks. As identified in the RISC's Framework[7] for Risk Mitigation, the RSTC is responsible for all steps of the framework, including: Risk Identification and Validation, Risk Prioritization, Determination of Risk Remediation/Mitigation, Deploying Risk Remediation/Mitigation, Measure Success, and Monitor Residual Risk. Therefore, the strategic plan includes key activities to support each of these steps.

The Risk Mitigation Framework guides the ERO in the prioritization of risks and provides guidance on the application of ERO policies, procedures, and programs to inform resource allocation and project prioritization in the mitigation of those risks. Additionally, the framework accommodates measuring residual risk after mitigation that enables the ERO to evaluate the success of its efforts in mitigating risk and provides a necessary feedback mechanism for future prioritization, mitigation efforts, and program improvements.

The successful reduction of risk is a collaborative process between the ERO, industry, and the technical committees including the RSTC and the RISC. The framework provides a transparent process using industry experts in parallel with ERO experts throughout the process—from risk identification and deployment of mitigation strategies to monitoring the success of these mitigations.

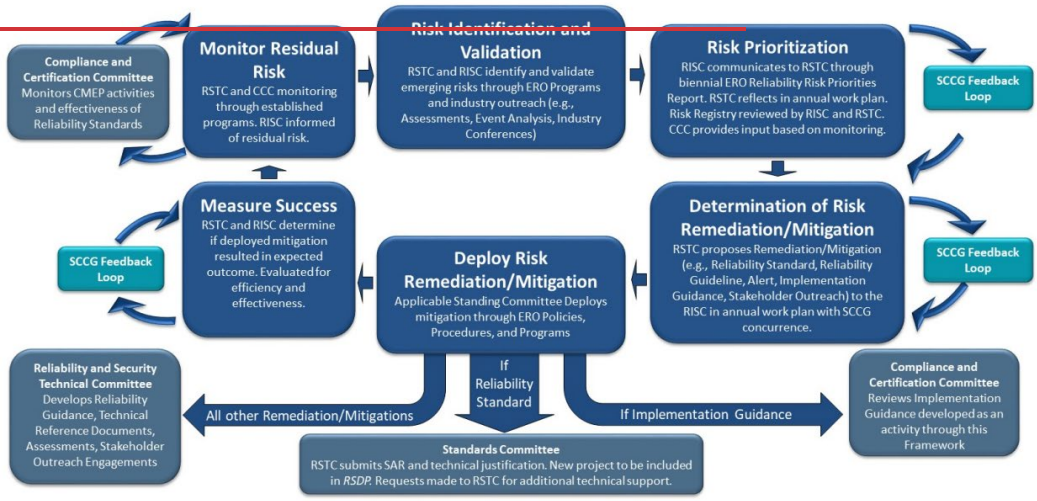


**Figure 2: ERO Mitigation Framework for Known and Emerging Reliability Risks**

The RSTC's Notional Work Plan Process[8] provides a detailed review of each step and how the RSTC supports and actively contributes to the risk mitigation framework. The following table summarizes how the RSTC performs each step and the expected deliverables that support the Risk Mitigation Framework:

[7] https://www.nerc.com/comm/RISC/Related%20Files%20DL/Framework-Address%20Known-Emerging%20Reliabilit-Securit%20%20Risks_ERRATTA_V1.pdf
[8] https://www.nerc.com/comm/RSTC/Documents/RSTC%20Work%20Plan%20Notional%20Process_Approved_Sept_2020.pdf

# ~~Chapter 5: Risk Mitigation Assessment Template~~

~~The RSTC uses this template for subgroups to evaluate risks and determine appropriate risk mitigation/remediation solutions:~~

| ~~Priority~~Risk Mitigation Framework Steps | ~~(From~~ RSTC ~~Risk Priorities)~~Role | RSTC Deliverable Type |
|---|---|---|
| ~~Identified Specific Risk~~ | ~~(From RSTC Strategic Plan – Identified Specific Risks)~~ | |
| ~~Description of Risk~~ | ~~(Description from subgroup)~~ | |
| 1. ~~Technical Background Materials~~Risk Identification and Validation | ~~(Links to whitepapers, technical papers, other RSTC or ERO published material)~~RSTC identifies and validates risks through its performance, event, and future technical analysis and assessments | ○ Identification and Monitoring<br>○ Long-Term and Seasonal Reliability Assessments<br>○ Special Assessments<br>○ Event and Disturbance Reports<br>○ State of Reliability Report<br>○ Other reliability/security indicators, whitepapers, gap assessments |
| 2. ~~Relative Priority~~Risk Prioritization | ~~(High, Med, Low – Based on the Subgroup's Assessment)~~RSTC provides support and consulting to the RISC prioritization and risk ranking actions. | |
| 3. Determination of Risk Remediation/Mitigation | RSTC proposes remediation/mitigation | ○ RSTC Biennial Strategic Plan |
| 4. Deploying Risk Remediation/Mitigation | ~~Recommended~~ RSTC develops and deploys remediation/mitigation ~~steps~~ | ~~(Proposed mitigation plan including, but not limited to, the following actions:~~<br>○ ~~Reliability Standards~~RSTC Work Plan<br>○ Standard Authorization Requests – SAR<br>○ Reliability/Security Guidelines<br>○ Compliance Guidance<br>○ Reliability and Security Assessments<br>○ Stakeholder Outreach<br>○ Technical Reference Document |

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| ~~Priority~~Risk Mitigation Framework Steps | ~~(From~~ RSTC ~~Risk Priorities)~~Role | RSTC Deliverable Type |
|---|---|---|
| | | ~~NERC Alert)~~<br><br>~~○ Identify the new RSTC Work Plan actions. Approval of this plan, per the RSTC Notional Work Plan Process, appends the RSTC work plan to include action items with specific deliverables.)~~ |
| **5. Measure Success** | RSTC ensures an approach to measure the effectiveness of the risk remediation/mitigation and deploys it. Measurement approach should be included in the approval of the deployed remediation/mitigation. | ○ Identification and Monitoring<br>○ State of Reliability Report<br>○ Event and Disturbance Reports<br>○ Special/Specific Reliability and Security Indicators |
| **6. Monitor Residual Risk** | RSTC monitors residual risk through established programs. | ○ Identification and Monitoring<br>○ Long-Term, Seasonal, and Special Reliability and Security Assessments<br>○ Event and Disturbance Reports<br>○ State of Reliability Report<br>○ Other reliability and security indicators and whitepapers |

**Determination of Risk Remediation/Mitigation**

Technical group, RSTC EC, and Sponsors discuss the reliability/resilience issues, technical justification, and consider possible solutions. Potential outcomes or solutions include deliverables in the RSTC Charter such as white papers, reference documents, technical reports, reliability guidelines, SARs and compliance implementation guidance. Other potential solutions are contained in NERC Rules of Procedure (RoP), ERO Event Analysis Process, NERC Alerts, and other risk management measures. Finally, the RSTC EC authorizes tasks to be added to the RSTC Work Plan (which could include collaboration with other groups), rejects proposed tasks, or refers matter(s) to the RSTC for further discussion.

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NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Reliability and Security Technical Committee

## 2024-2025 Strategic Plan

January 2024

**RELIABILITY | RESILIENCE | SECURITY**




3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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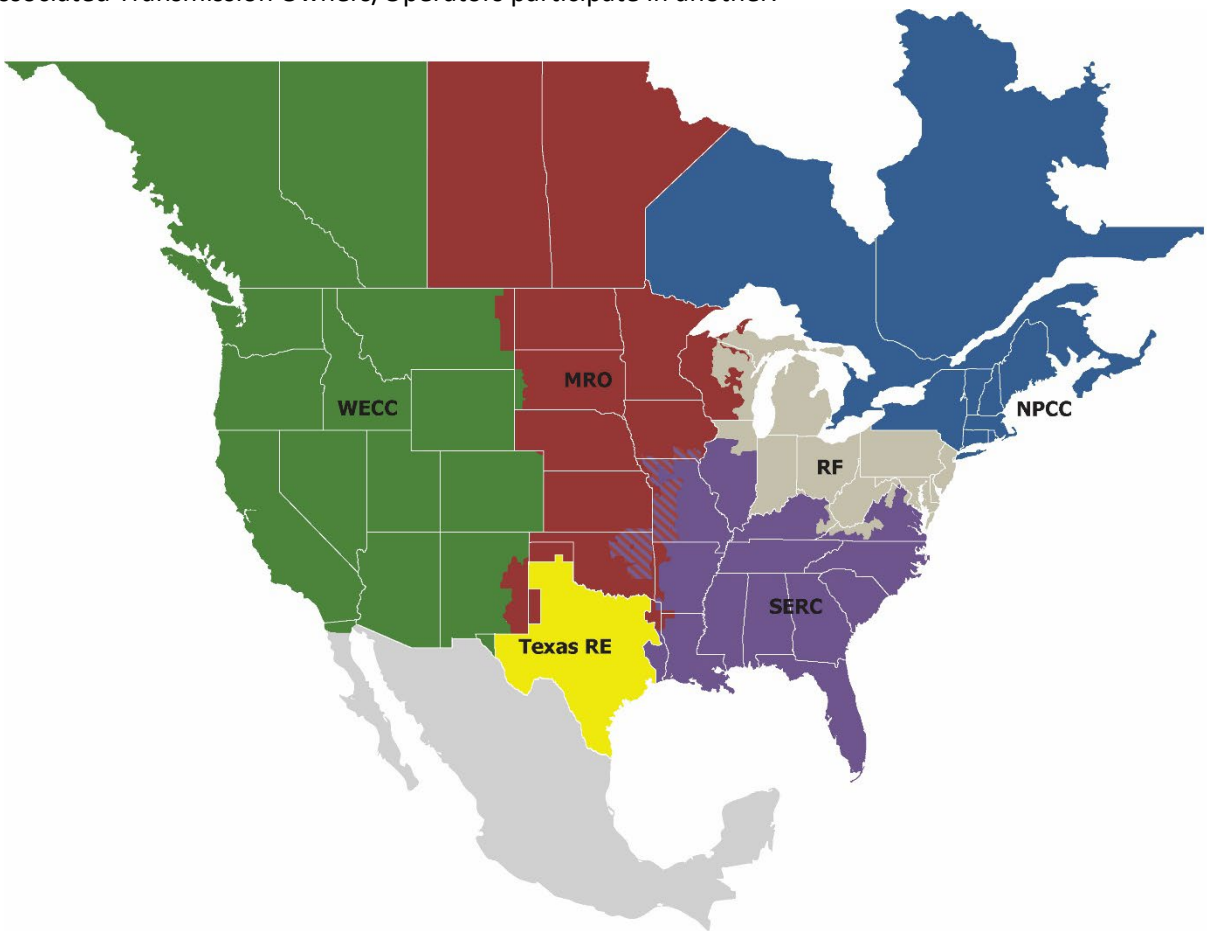
# Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
*Because nearly 400 million citizens in North America are counting on us*

The North American BPS is made up of six Regional Entities as shown on the map and in the corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.




| | |
|---|---|
| **MRO** | Midwest Reliability Organization |
| **NPCC** | Northeast Power Coordinating Council |
| **RF** | Reliability First |
| **SERC** | SERC Reliability Corporation |
| **Texas RE** | Texas Reliability Entity |
| **WECC** | WECC |

# Introduction and Objectives

The NERC Reliability and Security Technical Committee (RSTC) is a stakeholder committee chartered by the NERC Board of Trustees (Board) to proactively support the NERC ERO Enterprise's mission. The RSTC, in accordance with its charter, will develop and maintain a two-year strategic plan and an associated work plan to carry out the functions of the committee:

- Ensure alignment of the strategic work plan with ERO reports and analyses, including the NERC Business Plan and Budget, ERO Enterprise Long-Term Strategy, biennial Reliability Issues Steering Committee (RISC) ERO Reliability Risk Priorities report, State of Reliability report recommendations, Long Term, Seasonal and Special Reliability Assessment recommendations, and ongoing event analysis trends.
- Leverage industry technical expertise to provide insights, considerations and educational materials regarding reliability impacts of policy and regulatory decisions.
- Coordinate the objectives in the strategic work plan with the Standing Committees Coordinating Group.
- Support response to mandates related to BPS reliability (e.g. FERC Order 901[1], ITCS[2]).

This strategic plan guides the functions and core mission of the RSTC, providing a sustainable set of expectations and deliverables for the RSTC to assess and enhance reliability, resilience, and security of the BPS. The RSTC engages in the identification and communication of reliability risks along with potential mitigation strategies. These activities will include close coordination with the RISC as well as taking steps to create industry-wide awareness. This strategic plan will not remain static throughout a two-year timeframe. Rather, it is crucial that the plan retains the flexibility to address emerging issues.

This two-year plan, along with its goals and measures, is typically reviewed during the December RSTC meeting, and enhancements to the plan will be made and presented to the NERC Board each year in accordance with the Charter as required to achieve the goal of promoting reliability, resilience, and security.

[1] https://www.ferc.gov/media/e-1-rm22-12-000
[2] https://www.nerc.com/pa/RAPA/Pages/ITCS.aspx

# Executive Summary

Shortly after the Board approved the 2023 ERO Reliability Risk Priorities Report ("2023 ERO Risk Report") the RSTC convened a small group to conduct the two-year Strategic Planning Process, which is detailed in Appendix A. The group identified four strategic priorities, with the recognition of the need to increase awareness of reliability implications, and closer collaboration and coordination with policy makers on emerging energy policy issues:

1. Grid Transformation,
2. Inverter Based Resources (IBR),
3. Resilience and Extreme Events, and
4. Security.

Trends in several areas of the electric industry are the primary drivers of these priorities. Policy and economic drivers are shifting the resource mix from large, centralized fossil-fired power stations towards variable energy resources (VER) spread over large geographic areas. Concurrent with this shift, the capacity to provide essential reliability attributes that are inherent in large synchronous generators and critical to managing the reliability of the BPS are decreasing. The inverter-based devices that are expected to mimic and replace these Essential Reliability Services are still being evaluated for their applicability and functionality. Amid this transition, natural gas use for electric generation appears to increase in peak periods but for fewer hours. This is testing both the physical and regulatory interfaces between the electric and gas industries in novel ways. In addition, electric demand is growing in extraordinary ways and with uncertain load profiles. Compounding the risks, the impact of extreme weather events during this transition is challenging system operators in unprecedented ways. Finally, security risks appear to be increasing, and all industry stakeholders must remain vigilant to physical and cyber-attacks and disruption of globally interconnected supply chains.

With respect to the four emerging strategic risks, the RSTC identified specific focus areas and desired outcomes. Potential risk mitigation steps are left for further investigation by the subcommittees, working groups, and task forces (collectively "subgroups")."). A complete list of the focus areas follows:

**Grid Transformation**

1. Energy Assurance: As the grid relies on more just-in-time fueled resources – i.e., natural-gas fired generators and VERs – and traditional, slower starting resources have become less economic to operate, ensuring energy is available and delivered at the right time to serve load is essential.
2. Gas-Electric Coordination: The gas infrastructure and regulatory framework were not originally designed to support the needs of the electric industry. As the generation fleet transitions to less carbon-intense resources, the use of gas fired resources for base load and peaking needs is increasing during critical times and under certain conditions, and the limitations of this historical framework are becoming more apparent.
3. Demand Growth: Electrification policies are adding to traditional macroeconomic-driven load growth. Moreover, the characteristics of newly connected loads are not well understood and may present unique reliability challenges. These demands compound the challenges of an evolving generation mix and manifestly increase reliability risk.
4. Distributed Energy Resources (DER): As the grid shifts toward more decentralized, distribution-connected generation, the reliability attributes also shift to where the generation is connected. This step towards major decentralization could be accompanied with unintended risks. Current Reliability Standard requirements are centrally focused to require performance on the generation side to serve load. There are no existing requirements that distribution-connected resources perform to maintain the reliability of the bulk power system.

5. Demand and DER Aggregators: For many years, utilities have implemented demand side programs to manage demand on their systems in an aggregated manner. Policy decisions, such as FERC Order 2222 along with technology advances, have also increasingly opened the door to market participation by aggregators of distribution-connected resources and for "third party" aggregators to manage and control their operation. The current and forecasted state of aggregation needs to be fully assessed to ensure we appropriately prioritize and coordinate efforts regarding aggregators of distribution-connected resources and performance, modeling, and visibility of these resources.

**Inverter-Based Resources**

1. IBR Performance: As the first generations of IBRs were deployed and reached a critical mass, issues with their ability to ride through system faults and disturbances became apparent. This has resulted in concerns for grid operators, and there are efforts underway to address the performance of in-service IBRs.
2. IBR Modeling versus Performance: In addition to the aforementioned operating concerns the nascent industry has lacked standard models used for power flow and grid stability analysis. Additionally, interconnecting utilities have found many device settings of installed IBRs deviate from the models provided.
3. IBR Interconnection Requirements and Evaluation: IBR numbers are expected to grow over the next decade and exceed the megawatts of synchronous generation in many regions. RSTC and its subgroups are examining the viability of codifying interconnection requirements to address the concerns with ride-through and actual versus modelled performance, plus potentially adding certain reliability services, on a prospective basis.

**Resilience and Extreme Events**

1. Planning for High-Impact Events: Generation performance is correlated with weather, and demand may exhibit nonlinear behaviors under extreme conditions. This necessitates an assessment of risk in planning models including low frequency but highly impactful conditions.
2. Wide-area Energy Assessments: Short- and long-duration low-frequency, high-impact weather events sometimes extend beyond the boundaries of individual balancing authority areas and can lead to an increase in propagating risks across a wide area. Resource planning and reliability assessments would benefit from joint-regional coordinated action.

**Security**

1. Physical and Cyber Security: External threats have caused damage and disruption to the Bulk Electric System (BES). Unfortunately, threats from lone wolf actors to state-sponsored hackers are expected to increase. DERs and Distribution-Side Aggregators are expanding the current attack surface. Raising awareness of these threat vectors and the extent to which DER aggregators may be following cybersecurity protocols encourages protective actions that mitigate the risk and strengthen the grid.
2. Supply Chain Assurance and Protection: Today's supply chain is highly globalized to the extent the BPS may not be able to function if supply of certain components is disrupted or weaponized. The risks from globalization are coming into sharp focus with recent geopolitical events. Attention is required to ensure the grid continues to function in the event global supply chains are disrupted.

While the small group debated and identified the strategic risks, it became apparent that the RSTC should undertake a thorough examination of the indicators and metrics used to measure risk. The consensus among the group is that existing metrics sufficiently measure the current state of reliability and may be used to extrapolate trajectories with historical data, but these indicators do not sufficiently measure emerging, novel risks. In early 2024 the RSTC will discuss action to:

- Review current reliability metrics,
- Identify the risks that those metrics are attempting to address,
- Identify risks areas that could materialize in the future and are unique or peculiar to the strategic risks,
- Define leading indicators that may better forecast future risk areas and allow the ERO and stakeholders to proactively mitigate those risks, and
- Identify appropriate pathways to communicate risks and new leading indicators to energy policymakers.

Following Board approval, the RSTC will communicate these strategic risks and focus areas to the subgroup leads. Through an iterative process, these groups will propose to the RSTC specific work plan items intended to mitigate these identified risks. The RSTC will review the work plan items against this strategic plan for alignment and prioritization and approve the work plan items as appropriate. The rest of this document describes the details of the processes used to develop the strategic plan and describes those risks in more detail.

# Chapter 1: Mission, Vision, and Guiding Principles

## Mission

Ensure the reliability and security of the bulk-power system by identifying critical risks and deploying effective and efficient risk mitigations.

## Vision

The RSTC is the premier technical authority on BPS reliability, resilience, and security, and its effectiveness stems from the stakeholder members who command deep technical knowledge, broad industry experience, and a collective duty to ensure the reliability of the bulk-power system.

## Guiding Principles

The following principles serve to guide our practices:

- Coordinate with the RISC on priorities to align the RSTC strategic plan with the ERO's strategic plan.
- Maintain a focus on identification, analyses, and mitigation of existing and emerging reliability, resilience, and security risks.
- Continually strive for the development and dissemination of high-quality lessons learned through event analysis (EA), emerging cause code trending, and information sharing.
- Maintain relationships with other NERC standing committees (e.g. support the Standing Committee Coordinating Group), NERC Forums, and industry trade groups (e.g. NATF, IEEE).
- Maintain and enhance reliability, resilience, and security through the pursuit of clear NERC Reliability Standard Authorization Requests, Reliability Standards, Reliability Guidelines, Security Guidelines, Technical Reference Documents, NERC Alerts, Interpretations, lessons learned, and compliance clarifications.
- Incorporate a planning, operations and security perspective into NERC reports issued to industry.
- Deliver technically sound and accurate analyses, assessments, and recommendations.
- Identify critical emerging issues and trends that could potentially have reliability impacts in the near term and long term.
- Ensure the facts are unbiased and not providing an advocacy of policy matters.
- Promote coordination effectiveness across the NERC ERO Enterprise.
- Ensure continued provision of high levels of expertise, technically sound conclusions, and timely results/deliverables.
- Ensure the RSTC structure, processes and procedures, its working relationships with other technical standing committees, its subcommittees, working groups and task forces are focused on the highest priorities for reliability, resilience, and security within the ERO enterprise.

# Chapter 2: Strategic Objectives and Priorities

The RSTC's strategic objectives provide a bridge between the RSTC's mission and vision and the annual goals and work plan deliverables needed to achieve them. The strategic objectives of the RSTC provide clear expectations of the goals and deliverables of the committee and its subgroups and are not expected to change often. However, the strategic priorities and the expected work products may change, as needed. The strategic objectives of the RSTC are:

1. Drive effective mitigation actions against emerging and established reliability and security risks, specifically targeting the strategic priorities.
2. Promote and increase stakeholder and regulator engagement and awareness.
3. Learn from events and past performance trends and deploy mitigation.
4. Identify and assess long-term planning and emerging reliability and security risks.
5. Make recommendations and develop solutions that support technology and security integration into BPS planning and operations.
6. Provide general information to a wide audience that highlights reliability and security risks on the bulk power system from significant changes to energy resources and electric loads.

To achieve these objectives, the RSTC uses its subgroups to develop its work products. The subgroups are organized under three categories: Performance Monitoring, Risk Mitigation, and Reliability and Security Assessment.

There are two types of key projects included in the RSTC work plan to support the strategic objectives:

1. **Programmatic:** Periodic, cyclical or continuous actions, deliverables, and processes that support the identification, prioritization, and monitoring of reliability risks. The RSTC's **Performance Monitoring** and **Reliability and Security Assessment** subgroups primarily serve to support programmatic strategic objectives.
2. **Prioritized Risk:** Targeted and focused actions to identify and develop specific reliability risk mitigations. The RSTC's **Risk Mitigation** subgroups primarily serve to support the strategic risk mitigation objectives. This also includes emerging risks identified between strategic planning periods (from assessments, disturbance reports, etc.).

## Programmatic

1. **Identify key areas of concern, trends, and emerging reliability issues by periodically assessing system reliability and performance.**

   The RSTC will focus on developing reliability assessments, evaluations, and studies, and extracting insights to identify reliability, resilience, and security risks. By identifying and quantifying emerging risks, the RSTC is able to craft risk-informed recommendations, provide the basis for actionable risk mitigations, and provide education to industry stakeholders and policymakers. The RSTC supports this process primarily through the Reliability Assessment Subcommittee (RAS), Performance Analysis Subcommittee (PAS), and Resources Subcommittee (RS). Primary deliverables include:

   a. **Long-Term Reliability Assessment (annually):** 10-year outlook of resource adequacy and transmission projections. Emerging reliability and security integration issues are identified.

   b. **Seasonal Reliability Assessments (annually):** Summer and winter season operational outlook, projection, and leading indicators.

   c. **Special Reliability Assessments (ad-hoc):** topical technical evaluation of a specified reliability risk.

d. **State of Reliability Report (annually):** Historical performance, evaluating 5-year (or longer) trends, indicators, and lagging metrics.

e. **Frequency Response Annual Analysis (annually):** Historical performance of frequency response per a Federal Energy Regulatory Commission (FERC) directive.

2. **Identify lessons learned and trends based on system events and make recommendations for improvement.** The RSTC will focus on event prevention or mitigation by supporting and continually enhancing the ERO's EA program to ensure a comprehensive process, as well as rapidly developing and disseminating lessons learned. Through the Event Analysis Subcommittee (EAS), the RSTC approves any changes to the EA Process and reviews periodic event reports and lessons learned. Any mitigation actions for the ERO to pursue or recommendations for industry can result in additions to the RSTC work plan and, depending on the outcomes of the risk assessment, may be added to the strategic objectives. Primary deliverables include:

   a. **Event and Disturbance Reports (*ad-hoc*):** Event reports detail specific details and root causes of BPS events. The EA Process is approved by EAS, and individual reports are published by the ERO and serve as input to the RSTC.

   b. **Lessons Learned (*ad-hoc*):** Identified best practice or revealing reliability risk based on an event or group of events. Lessons Learned documents are published by the ERO and serve as input to the RSTC.

3. **Promote and increase stakeholder engagement and awareness of reliability risks.** The RSTC will continue to promote outreach to stakeholder and policymaking organizations on reliability, resilience, and security matters through webinars and in-person conferences, workshops, and other mediums to deliver content and reliability messages. The RSTC will leverage strong relationships with industry groups such as NATF, NAGF, IEEE, EPRI etc. as well as regulatory and governmental authorities to target specific technical areas of concern and work together on industry outreach. Primary engagements include:

   a. **Reliability Conferences and Workshops (*ad-hoc*):** Convene industry to share and exchange ideas and practices that promote reliability in a variety of technical areas. Conferences can support the RSTC's mission by "creating a forum for aggregating ideas and interests, drawing from diverse industry stakeholder expertise, to support the ERO Enterprise's mission."

   b. **Webinars (*ad-hoc*):** Virtual information sharing and exchange provides opportunities to quickly engage industry and achieve our collaboration goals. Webinars serve an integral function of providing insight and guidance by disseminating valuable reliability information to owners, operators, and users of the BPS.

# Priority Risks

Based on the Risk Profiles identified by the RISC, the RSTC has identified four strategic priorities: 1) Grid Transformation, 2) Inverter-Based Resources, 3) Resilience and Extreme Events, and 4) Security.

| Risk Profiles (RISC Risk Priorities Report) | RSTC Strategic Risk Priorities |
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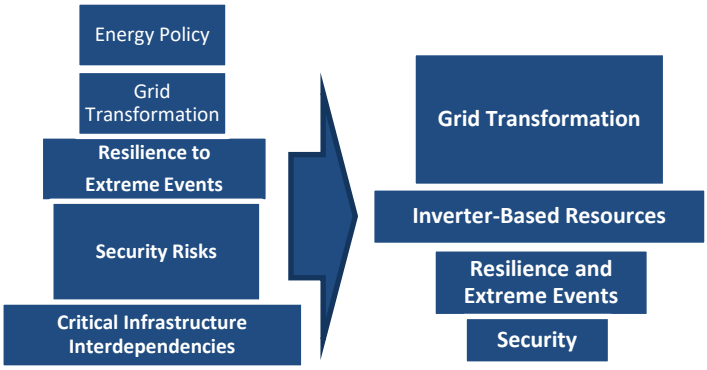



Future actions by the RSTC on its Strategic Risk Priorities are focused on the risk mitigation and deployment parts of the Framework for Risk Mitigation as explained in Appendix A. Through this strategic plan, subgroups are identified and tasked with identifying risk mitigation solutions (e.g., Reliability Standard, Reliability/Security Guideline) and working with the RSTC Executive Committee (EC) and subgroup sponsors to add the risk mitigation projects to the RSTC Work Plan. The RSTC EC authorizes projects to be added to the RSTC Work Plan (which could include collaboration with other groups), rejects proposed tasks that are not aligned with the prioritized risks, or refers matter(s) to the RSTC for further discussion. For each RSTC Strategic Risk Priority, a 2-Year plan is detailed below indicating specific risks, desired outcome and measures of success.

1. **Grid Transformation**

   Unassured fuel supplies, including the timing and inconsistent output from VERs, pipeline deliveries, and uncertainty in forecasted load can result in insufficient amounts of energy on the system to serve electrical demand and ensure the reliable operation of the BPS throughout the year.[3] The RSTC and its subgroups will develop methods, processes, tools, and/or SARs that are needed to address energy security – factoring in modelling requirements, extreme events and critical infrastructure interdependencies.

   A part of the grid transformation creates a higher reliance on natural gas resources as a prime flexible resource to ensure reliable operation of the Grid. Coordination between the gas and electric systems will become even more important over the transition. Differences in scheduling requirements, physical capacity constraints, and adequate ramping capability must be addressed to ensure a reliable transition.

   Public policy and economics continue to drive the retirement of traditional resources at a time when load growth is beginning to quickly increase in portions of NERC. Technologies, such as electric vehicles, as well as new computing techniques, are driving substantial portions of this load growth. Some of the loads may have unique characteristics or interactions with other grid loads and resources that need to be fully understood to maintain reliability.

   In addition, across the industry there has been significant discussion regarding the impact of Distributed Energy Resources and aggregation of demand-side resources. The potential BES reliability impacts need to be assessed to ensure appropriate prioritization of industry resources around this topic.

[3] https://www.nerc.com/comm/RSTC/ERATF/ERATF%20Energy%20Adequacy%20White%20Paper.pdf

| Identified Specific Risks | Technical Areas of Focus | Desired Outcome | Measure of Success |
|---|---|---|---|
| **Energy Assurance**: Insufficient assessment of energy supplies to ensure operational awareness and energy availability. | • Modeling and data sharing requirements<br>• System Operations<br>• Resource planning | • SAR for Reliability Standards (submitted in 2022)<br>• Supplemental materials developed and disseminated for industry use in performing energy assessments | • Standards Committee approval of new Reliability Standards<br>• RSTC approval / endorsement of Considerations for Performing an Energy Reliability Assessment, Volume 2<br>• EEA3 trends<br>• Performance during extreme weather conditions<br>• CPS1 trends |
| **Energy Assurance**: Insufficient assessment of energy supplies to evaluate resource requirements in the long-term planning horizon. | • Modeling and data sharing requirements<br>• Resource planning | • SAR for Reliability Standards (submitted in 2022)<br>• Work on Long-Term Planning Horizon Standards expected to begin in 2024<br>• Supplemental materials developed & disseminated for industry use in performing energy assessments | • Standards Committee approval of new Reliability Standards (separate effort and SAR from Operations Planning Standards)<br>• RSTC approval / endorsement of Considerations for Performing an Energy Reliability Assessment, Volume 2<br>• EEA3 trends<br>• CPS1 trends |
| **Gas-Electric Coordination:** Increased dependence on natural gas as fuel for flexible and dispatchable resources | • Resource Planning<br>• Modeling and data sharing requirements<br>• System Operations | • Support WSE Joint Inquiry Report recommendations<br>• Support DOE/NERC balancing study<br>• Proactively identify regions and scenarios of elevated risk | • Reduce risk and actual occurrences of fuel-related generation outages due to lack of pipeline gas |
| **Demand Growth**: Accelerated demand growth | • Reliability Assessment<br>• Resource Planning | • Methods to educate Policy Makers are effectively communicating reliability risks associated with the evolving resource mix<br>• Methods / standards in place to ensure an adequate level of essential reliability services are | • SRA/WRA<br>• LTRA<br>• State of Reliability |

| Identified Specific Risks | Technical Areas of Focus | Desired Outcome | Measure of Success |
|---|---|---|---|
| | | maintained throughout the transition | |
| **Demand Growth**: New loads may have unique characteristics which could present reliability concerns | • Load Modeling<br>• System Operations<br>• Transmission Planning | • Unique characteristics of new loads are identified & understood.<br>• Viable solutions to address reliability concerns of new load characteristics are identified and documented. | • State of Reliability |
| **Distributed Energy Resources:** High penetration of DER may pose a reliability risk | • Identify specific reliability risks<br>• Load forecasts<br>• Ride-through | • Complete assessment of existing and expected penetration of Distributed Energy Resources and identification of associated reliability risks | • LTRA<br>• Event Analysis |
| **Demand and DER Aggregation:** Increasing aggregation of demand side resources may pose reliability and security risks | • Identify specific aggregation operating modes | • Complete assessment of existing and expected activity of demand side aggregation of distribution-connected resources and identification of associated reliability risks<br>• Evaluate cybersecurity, back-up control, essential reliability service, dispatchability, and reliable integration of DER aggregators.<br>• Identify performance, modeling and data sharing requirements for planning and operating the BES | • LTRA<br>• Event Analysis |

**2. Inverter-Based Resources**

The bulk power system in North America is undergoing a significant transformation in technology, design, control, planning, and operation. These changes are occurring more rapidly than ever before. Particularly, technological advances in IBRs are having a major impact on generation, transmission, and distribution systems. The speed of this change continues to challenge grid planners, operators, and protection engineers. Implemented correctly, inverter-based technology can provide significant benefits for the BPS; however, events have shown that the new technology can introduce significant risks if not integrated properly.

The ERO has established a strategy that outlines steps NERC and the Regional Entities will take to mitigate risks associated with the integration of large amounts of IBR.[4] The RSTC will drive improvements in the performance of IBRs by focusing on the improvement of IBR interconnection, planning studies, and operations, as well as staying abreast of new inverter technologies and risks. Communicating risk and mitigation measures across the industry will be a critical component of this strategy to enhance IBR performance.

| Identified Specific Risks | Technical Areas of Focus | Desired Outcome | Measure of Success |
|---|---|---|---|
| IBR Performance | • System Operations<br>• Event Analysis | • IBR ride-through of faults | • Event Analysis Process<br>• State of Reliability Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |
| IBR Performance: Monitoring | • Event analysis | • Identify and study Events involving IBR performance | • Event Analysis Process<br>• State of Reliability Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |
| IBR Modelling versus Performance | • Modeling and Data Sharing<br>• Long-term planning studies<br>• Event Analysis | • IBRs perform as modeled, or actual IBR performance is modeled in planning. | • Event Analysis Process<br>• State of Reliability Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |
| IBR Interconnection Requirement and Evaluation | • Modeling and Data Sharing | • Impact of IBR Interconnection is fully understood and modelled before operating | • Event Analysis Process<br>• State of Reliability Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment |

**3. Resilience and Extreme Events**

Recent cold weather events (e.g. Polar Vortices, Winter Storms Elliot and Uri), heat events (e.g. 2020 California event and British Columbia's heat dome), and localized natural events (e.g. hurricanes, derechos

[4] https://www.nerc.com/comm/Documents/NERC_IBR_Strategy.pdf

and ice storms) represent an increase in extreme natural events that have an impact on the resilience and reliability of the BPS. The RSTC and its subgroups will ensure modeling requirements include new approaches to adequately assess risks from low-frequency, high-impact events, including wide-area impacts to enable reliable operations of the BPS, and improve resource and energy planning.

The RSTC will develop methods, processes, tools, and/or SARs that are needed to address system resiliency and reliability during extreme events.

| Identified Specific Risks | Technical Areas of Focus | Desired Outcome | Measure of Success |
|---|---|---|---|
| **Planning for High-Impact Events**: Assess expected performance of the bulk power system during extreme events | • Load Forecasting<br>• Probabilistic Assessment<br>• Energy Assessment<br>• Model Verification<br>• Transmission Planning | • Develop new approaches in ERO reliability assessments to adequately assess impacts of extreme events.<br>• Leverage existing GridEx events to assess readiness from a confluence of extreme weather and cyber events. | • Event Analysis Process<br>• State of Reliability Report<br>• Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment<br>• Special Assessment |
| **Wide-Area Energy Assessment**: Assess expected performance of the bulk power system during extreme events involving neighboring regions | • Energy Assessment<br>• Probabilistic Assessment<br>• Model Verification<br>• Transmission Planning | • Enhancement to Reliability Assessment Process to include Wide-Area Energy Assessment Capabilities<br>• Develop new approaches in ERO reliability assessments to adequately assess wide-area energy risks.<br>• Conduct special assessments of wide-area extreme event impacts.<br>• Sponsor joint regional reliability assessments that could occur from extreme weather events. | • Summer and Winter Reliability Assessments<br>• Long-Term Reliability Assessment<br>• Special Assessment |

**4. Security**

Exploitation of security risks could arise from a variety of external and/or internal sources. Additionally, the operational and technological environment of the electrical grid is evolving significantly and rapidly and increasing the potential cyberattack surface. Sources of potential exploitation include increasingly sophisticated attacks by nation-state, terrorist, and criminal organizations. Vulnerability to such exploits is exacerbated by insider threats, poor cyber hygiene, supply-chain considerations, and dramatic transformation of the grid's operational and technological environment. Supply chains, specifically, are a targeted opportunity for nation-state, terrorists, and criminals to penetrate organizations without regard to whether the purchase is for information technology, operational technology, software, firmware, hardware, equipment, components, and/or services.

Supply chain risk management and the threats from components and sub-components developed by potential foreign adversaries should continue to be addressed by NERC and industry with evaluation of CIP-013 standard for any needed improvements. Over the next two years, the RSTC will be focused on determining the risk mitigations.

| Identified Specific Risks | Technical Areas of Focus | Desired Outcome | Measure of Success |
|---|---|---|---|
| **Physical & Cyber Security:** | • Distributed Energy Resources<br>• Demand Side Aggregators<br>• Integration of new technology | • Improved awareness of and resistance to potential attacks | ▪ State of Reliability<br>▪ Event Analysis |
| **Supply Chain Assurance & Protection:** Inadequate supply chain security can disrupt, infiltrate, and expose OT systems to unauthorized control. | • Open-Source Software<br>• Provenance<br>• Risk Management Lifecycle<br>• Secure Equipment Delivery<br>• Vendor Risk Management<br>• Cloud Computing<br>• Vendor Incident Response<br>• Supply Chain Procurement | • Whitepaper: NERC Standards Gap Assessment<br>• Coordinate with NATF and NAGF for supply chain evaluation activities | ▪ SAR for Supply Chain Standards<br>▪ Evaluation of the security of the global supply chain and identification of critical components with limited availability |

# Chapter 3: Primary Subgroup Strategic Direction

In the table below, the RSTC's primary subgroups (those directly under the RSTC) each play a role in meeting the objectives and priorities of the RSTC. To provide additional clarity and direction, strategic direction that aligns with the RSTC's strategic priorities, in addition to what is identified in the scope of the subgroup, is provided below:

| Subgroup | Focus | Related Strategic Prioritized Risk |
|---|---|---|
| **Event Analysis Subcommittee (EAS)** | Identification<br>Monitoring | • Grid Transformation<br>• Inverter-Based Resources<br>• Resilience and Extreme Events |
| **Performance Analysis Subcommittee (PAS)** | Identification<br>Monitoring | • Grid Transformation<br>• Inverter-Based Resources<br>• Resilience and Extreme Events |
| **Real Time Operating Subcommittee (RTOS)** | Identification<br>Monitoring | • Grid Transformation<br>• Inverter-Based Resources<br>• Resilience and Extreme Events |
| **Synchronized Measurement Working Group (SMWG)** | Monitoring | • Grid Transformation<br>• Inverter-Based Resources |
| **Resources Subcommittee (RS)** | Identification<br>Monitoring | • Grid Transformation<br>• Inverter-Based Resources |
| **Energy Reliability Assessment Working Group (ERAWG)** | Determining<br>Deploying<br>Measuring | • Grid Transformation<br>• Inverter-Based Resources<br>• Resilience and Extreme Events |
| **Reliability Assessment Subcommittee (RAS)** | Identification<br>Monitoring | • Grid Transformation<br>• Inverter-Based Resources<br>• Resilience and Extreme Events |
| **Security Integration and Technology Enablement Subcommittee (SITES)** | Determining<br>Deploying<br>Measuring | • Grid Transformation<br>• Security |
| **6 GHz Task Force (6GTF)** | Determining<br>Deploying<br>Measuring | • Grid Transformation |
| **Electric-Gas Working Group (EGWG)** | Determining | • Grid Transformation |

| Subgroup | Focus | Related Strategic Prioritized Risk |
|---|---|---|
| | Deploying<br>Measuring | • Resilience and Extreme Events<br>• |
| **Facility Ratings Task Force (FRTF)** | Determining<br>Deploying<br>Measuring | • Resilience and Extreme Events |
| **Inverter-Based Resource Performance Subcommittee (IRPS)** | Determining<br>Deploying<br>Measuring | • Inverter-Based Resources |
| **Load Modeling Working Group (LMWG)** | Determining<br>Deploying<br>Measuring | • Grid Transformation |
| **Security Working Group (SWG)** | Determining<br>Deploying<br>Measuring | • Security |
| **Supply Chain Working Group (SCWG)** | Determining<br>Deploying<br>Measuring | • Security |
| **System Planning Impacts from Distributed Energy Resources Working Group (SPIDERWG)** | Determining<br>Deploying<br>Measuring | • Grid Transformation<br>• DER |
| **System Protection and Control Working Group (SPCWG)** | Determining<br>Deploying<br>Measuring | • Inverter-Based Resources |

# Appendix A: RSTC Strategic Planning Process

The RSTC Strategic Planning Process ensures high priority risks are systematically addressed by the RSTC using a common framework for decision-making with broad concurrence, as well as ensuring all committee members and stakeholders have clear expectations on how the RSTC plans to meet its objectives.

Following the issuance of the RISC report, a Strategic Planning group convenes to conduct the 2-year Strategic Planning Process

The Strategic Planning Process begins with the latest version of the RISC Risk Priorities report, which presents the results of strategically defined and prioritized risks, as well as specific recommendations for mitigation. The RSTC provides input into the development of this report and the RISC's risk assessment through a variety of mechanisms, including reliability assessments and event reports.

The RSTC Strategic Plan (this document) then aligns the highest-priority risks and recommendations from the Risk Priorities Report and with the priorities outlined for the RSTC over the next two years. Additional priorities based on high-priority emerging risks identified by the RSTC may be included within the 2-year Strategic Plan (as determined by the RSTC's Executive Committee).

Once all priorities are identified for the RSTC, specific risks are identified and RSTC subgroups determine the recommended mitigation steps. These risk mitigation projects, along with programmatic actions, then comprise the detailed RSTC Work Plan. Many of the identified risks share interdependencies that will be considered in the development of the work plan.

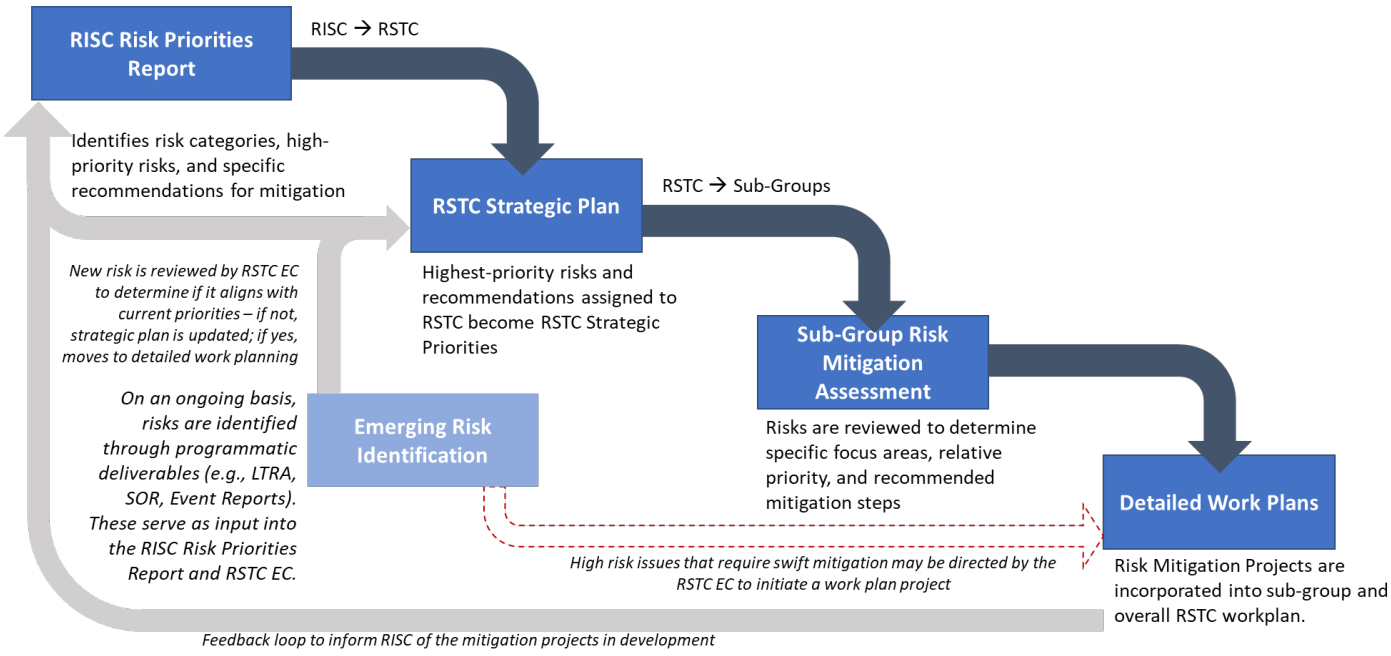



**Figure 1: RSTC Strategic Planning Process Flow Chart**

# RSTC Strategic Plan Role in Risk Mitigation

The RSTC provides expertise in reliability, resilience, and security, and plays a key role in the mitigation of reliability, resilience, and security risks. As identified in the RISC's Framework[5] for Risk Mitigation, the RSTC is responsible for all steps of the framework, including: Risk Identification and Validation, Risk Prioritization, Determination of Risk Remediation/Mitigation, Deploying Risk Remediation/Mitigation, Measure Success, and Monitor Residual Risk. Therefore, the strategic plan includes key activities to support each of these steps.

The Risk Mitigation Framework guides the ERO in the prioritization of risks and provides guidance on the application of ERO policies, procedures, and programs to inform resource allocation and project prioritization in the mitigation of those risks. Additionally, the framework accommodates measuring residual risk after mitigation that enables the ERO to evaluate the success of its efforts in mitigating risk and provides a necessary feedback mechanism for future prioritization, mitigation efforts, and program improvements.

The successful reduction of risk is a collaborative process between the ERO, industry, and the technical committees including the RSTC and the RISC. The framework provides a transparent process using industry experts in parallel with ERO experts throughout the process—from risk identification and deployment of mitigation strategies to monitoring the success of these mitigations.

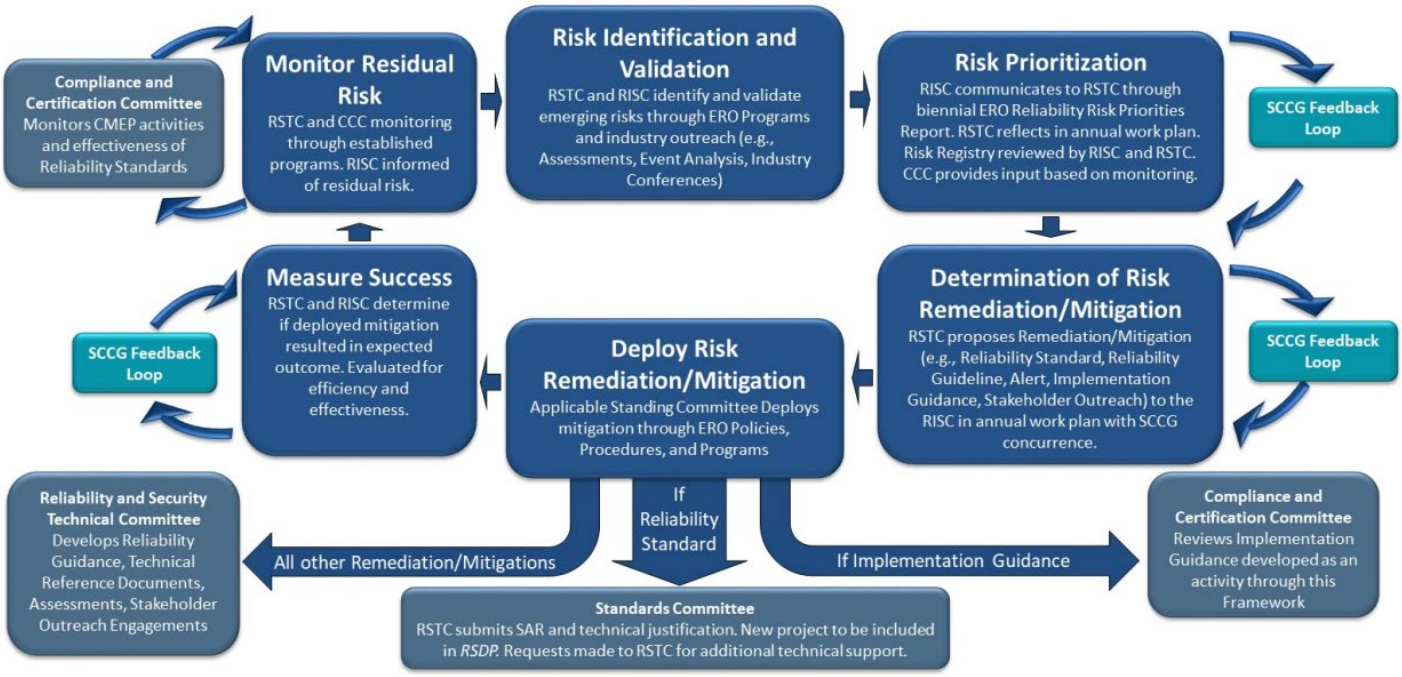



**Figure 2: ERO Mitigation Framework for Known and Emerging Reliability Risks**

The RSTC's Notional Work Plan Process[6] provides a detailed review of each step and how the RSTC supports and actively contributes to the risk mitigation framework. The following table summarizes how the RSTC performs each step and the expected deliverables that support the Risk Mitigation Framework:

[5] https://www.nerc.com/comm/RISC/Related%20Files%20DL/Framework-Address%20Known-Emerging%20Reliabilit-Securit%20%20Risks_ERRATTA_V1.pdf
[6] https://www.nerc.com/comm/RSTC/Documents/RSTC%20Work%20Plan%20Notional%20Process_Approved_Sept_2020.pdf

| Risk Mitigation Framework Steps | RSTC Role | RSTC Deliverable Type |
|---|---|---|
| **1. Risk Identification and Validation** | RSTC identifies and validates risks through its performance, event, and future technical analysis and assessments | • Identification and Monitoring<br>▪ Long-Term and Seasonal Reliability Assessments<br>▪ Special Assessments<br>▪ Event and Disturbance Reports<br>▪ State of Reliability Report<br>▪ Other reliability/security indicators, whitepapers, gap assessments |
| **2. Risk Prioritization** | RSTC provides support and consulting to the RISC prioritization and risk ranking actions. | |
| **3. Determination of Risk Remediation/Mitigation** | RSTC proposes remediation/mitigation | • RSTC Biennial Strategic Plan |
| **4. Deploying Risk Remediation/Mitigation** | RSTC develops and deploys remediation/mitigation | • RSTC Work Plan<br>▪ Standard Authorization Requests – SAR<br>▪ Reliability/Security Guidelines<br>▪ Compliance Guidance<br>▪ Reliability and Security Assessments<br>▪ Stakeholder Outreach<br>▪ Technical Reference Document<br>▪ NERC Alert |
| **5. Measure Success** | RSTC ensures an approach to measure the effectiveness of the risk remediation/mitigation and deploys it. Measurement approach should be included in the approval of the deployed remediation/mitigation. | • Identification and Monitoring<br>▪ State of Reliability Report<br>▪ Event and Disturbance Reports<br>▪ Special/Specific Reliability and Security Indicators |
| **6. Monitor Residual Risk** | RSTC monitors residual risk through established programs. | • Identification and Monitoring<br>▪ Long-Term, Seasonal, and Special Reliability and Security Assessments<br>▪ Event and Disturbance Reports<br>▪ State of Reliability Report<br>▪ Other reliability and security indicators and whitepapers |

**Determination of Risk Remediation/Mitigation**

Technical group, RSTC EC, and Sponsors discuss the reliability/resilience issues, technical justification, and consider possible solutions. Potential outcomes or solutions include deliverables in the RSTC Charter such as white papers, reference documents, technical reports, reliability guidelines, SARs, and compliance implementation guidance. Other potential solutions are contained in NERC Rules of Procedure (ROP), ERO Event Analysis Process, NERC Alerts, and other risk management measures. Finally, the RSTC EC authorizes tasks to be added to the RSTC Work Plan (which could include collaboration with other groups), rejects proposed tasks, or refers matter(s) to the RSTC for further discussion.

Agenda Item 7e
Board of Trustees Meeting
February 15, 2024

# Reliability Issues Steering Committee Report

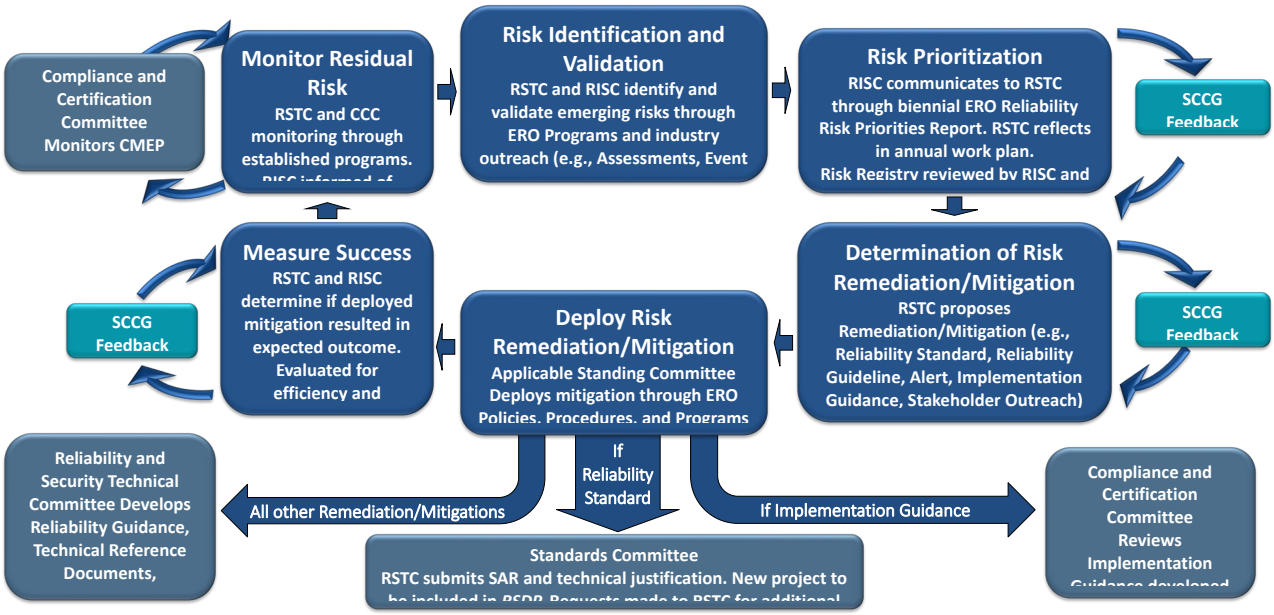
## Action
Information

## Summary
The ERO mission requires establishing a consistent framework to identify, prioritize and address known and emerging reliability and security risks. To support this mission the *Framework to Address Known and Emerging Reliability and Security Risks (Framework)* was developed. The Framework is an iterative six-step risk management framework shown in the diagram below. Mitigation of risks to Bulk Electric System (BES) reliability can be classified according to the likelihood of the risk occurring and the severity of its impact.

The RISC collaborates with the RSTC and other standing committees to ensure that risks identified through the development and publication of the biennial *ERO Reliability Risk Priorities Report (Risk Report)* are prioritized and mitigated. The RISC also considers risks identified through other ERO Programs such as Reliability Assessments, Event Analysis and a variety of industry engagements.

As part of 2024 and its ongoing work on the identification and mitigation of emerging risks, the RISC leadership will collaborate with the other Standing Committees leadership to evaluate and update the Framework as needed to ensure the Framework continues to be a valuable tool in meeting the ERO mission.

Additionally, the RISC will, in the first quarter of 2024, evaluate its development timeline and process for the Reliability Leadership Summit and Risk Report.



**To:** NERC Board of Trustees (BOT)

**From:** Thomas J. Galloway, NATF President and CEO

**Date:** January 17, 2024

**Subject:** NATF Periodic Report to the NERC BOT (February 2024)

**Attachments:** NATF External Newsletter (January 2024)

The NATF interfaces with the ERO as well as other external organizations on key reliability, resiliency, security, and safety topics to promote improvement while reducing duplication of effort. Some examples are listed below and in the attached NATF external newsletter, which is also available on our public website: www.natf.net/news/newsletters.

## NATF-ERO Leadership Meetings

To promote effective coordination, NATF and ERO leadership meet periodically to discuss topics and activities. The most-recent meeting occurred October 24, 2023. Topics included an E-ISAC update, the 2023 NERC RISC report and risk registry, cross-regional transfer capability study, inverter-based resources, and security (cyber, physical, and supply chain).

Planning is underway for a face-to-face strategy session in April. Potential topics include an ERO risk registry overview, RISC report mitigation activities, and related areas for NATF leadership as we continue to collaborate with the ERO.

## Transmission Planning and Construction

In its *2023 Long-Term Reliability Assessment* summary, NERC noted a priority action to "expand the transmission network to provide more transfer capability and deliver supplies from new resources and locations to serve changing loads." While the NATF mission is focused on promoting excellence in (safe, reliable, secure, and resilient) operations, we work on topics such as asset management and are discussing ways to support members regarding the transmission buildout needed for the transformation of the grid.

To support NERC, the NATF provided feedback during the request for comments on the draft technical justification document and related standards authorization request on scenario-based transmission planning ("Transmission Planning Energy Scenarios").

As noted in the attached newsletter, we also coordinate with NERC and the Electric Power Research Institute on industry seminars related to transmission modeling and planning.

## Inverter-Based Resources

Both the NATF and NERC are working on aspects of the grid's changing resource mix. During recent leadership meetings, NATF and ERO leadership discussed options for coordination related to the increase of inverter-based resources, a key part of grid transformation. A particular focus will be managing interconnection requests, studies, and agreements—and ensuring that new inverter-based facilities are built, commissioned, and continue to operate in accordance with these agreements.

# Security

Security is vital to grid operations, and the NATF maintains multiple practice groups (physical, cyber, and supply chain) to support members and advance knowledge. We share information internally and externally, support a broad-reaching industry effort for supply chain cyber security, coordinate with the E-ISAC (e.g., Manny Cancel attended the NATF's December members meeting), and participate in industry events, such as GridEx and technical conferences. A few relevant physical and cyber topics are noted below.

## Physical Security

We are working closely with members on asset protection with the understanding there is not a one-size-fits-all approach in this area. We are discussing methods of assigning facilities to tiers that reflect their importance and determine the required levels of protection.

NATF CEO Tom Galloway participated as a panel member for the "Best Practices and Operational Preparedness" portion of the joint (NERC and FERC) physical security technical conference on August 10. NATF staff submitted post-conference comments reaffirming that CIP-014 requirements should be reserved for a very specific subset of industry assets and that any further security requirements should be risk-based.

## Cyber and Supply Chain Security

We are following efforts related to virtualization and internal network security monitoring and are prepared to support our members accordingly. Regarding supply chain, we have started a project to map NATF criteria to established security frameworks (see more in the attached newsletter).

# North American Transmission Forum External Newsletter

January 2024

## NATF Welcomes Missouri River Energy Services and ATCO Electric

Missouri River Energy Services (MRES) and ATCO Electric are the newest NATF members. MRES is a municipal utility providing energy to 61 member distribution systems in Iowa, Minnesota, North Dakota, and South Dakota. ATCO is an investor-owned utility operating approximately 6,000 circuit miles of transmission line rated at 100 kV and above in north and east-central Alberta. Click here to learn more about NATF membership.

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## Annual NERC-NATF-EPRI Transmission Planning and Modeling Seminar

The NATF, North American Electric Reliability Corporation (NERC), and Electric Power Research Institute (EPRI) conducted an annual transmission planning and modeling seminar on November 1–2, 2023. This virtual event focused on bulk power system load modeling, integrated system planning practices, inverter-based resource risk mitigation, and updates on the latest research and activities across the industry. Materials (for day 1 and day 2) are posted on NERC's website.

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## NERC-NATF-EPRI Extreme Weather Transmission Planning and Modeling Seminar

On January 17, 2024, the NATF, NERC, and EPRI will host a seminar to focus on weather and climate data criteria and characteristics needed to establish network models for extreme weather per FERC Order 896 and cover how to identify and develop benchmark planning cases for extreme heat and cold. The standard drafting team for TPL-008 will release the draft standard for review in February 2024, and this event will provide context and the scientific basis for decisions included in the standard.

Additional topics include transmission planning practices for developing weather-impacted power flow cases and the science behind climate-impacted weather data in the long-term transmission planning timeframe (offered by climate experts from national labs and agencies).

Registration is open and a draft agenda is posted here.

***

## NATF Supplier Outreach and Coordination

The NATF continues to promote good supply chain security practices and examples through its collaborative work with industry suppliers. On November 6–7, 2023, the NATF hosted a virtual supplier sharing seminar covering national strategies and practical applications regarding supply chain. Stephanie Johnson (program manager of supply chain risk management at CESER/DOE) provided keynote remarks. Other topics included national strategy, international suppliers, regulations, risk management with customers, software bills of materials, certification, and cloud security. Materials are posted on the NATF's Supply Chain Cyber Security Industry Coordination website.

***

# Supply Chain Resources: Revision Process and Mapping Project

## Revision Process Underway

The annual revision process for the *NATF Supply Chain Security Criteria* and the *Energy Sector Supply Chain Risk Questionnaire* is underway. The revision process, the criteria, and the questionnaire are posted on the NATF's public Supply Chain Cyber Security Industry Coordination site. The process is open to industry, suppliers, regulators, and other stakeholders to provide the opportunity for input.

These tools are useful for risk management and compliance efforts. Both the criteria and the questionnaire are incorporated into the ERO Enterprise-endorsed implementation guidance documents for CIP-013 (available on the NERC website and the NATF public website):

- *NATF CIP-013 Implementation Guidance: Using Independent Assessments of Vendors*
- *NATF CIP-013 Implementation Guidance: Supply Chain Risk Management Plans*

These implementation guidance documents support using the criteria and questionnaire in a risk-based manner, where the entity determines which criteria or questions apply for a procurement.

Input on the criteria and questionnaire can be submitted to supplychain@natf.net until close of business January 26 for consideration in the 2024 review cycle. Revisions will be posted in redline format on March 8 for a 30-day comment period.

## Coming Soon: Mapping of NATF Criteria and Questionnaire to Established Security Frameworks

The NATF has engaged subject-matter experts to update the mapping of the NATF criteria to established security frameworks (e.g., ISO 27000, ISA/IEC 62443, NIST, SOC2, CIP). The project will also include a mapping of the questionnaire to those same frameworks. The updates should be available this spring.

Upon completion and posting, these mappings will facilitate industry and suppliers' ability to leverage existing security certifications many suppliers obtain. This effort aligns with the NATF's supply chain objectives of convergence and efficiency by taking advantage of existing certifications rather than creating a new certification for establishing reasonable assurance of supplier security practices. The NATF plans to conduct a special webinar for its members, industry, and suppliers to provide an overview of the mapping and its potential applications.

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*For more information about the NATF, please visit https://www.natf.net/.*

# North American Generator Forum

**TO:** **NERC Board of Trustees**
**James B. Robb, President and CEO**

**FROM:** **Allen D. Schriver, Policy Coordinator, North American Generator Forum (NAGF)**

**DATE:** **January 24, 2024**

**SUBJECT: NAGF 2023-24 Fall/Winter Activity Report**

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The NAGF is actively engaged in the following NERC Projects to help ensure the generator sector perspective is heard and understood:

- NERC Project 2016-02: CIP Standards Virtualization Modifications Draft #5
- NERC Project 2020-02: Modifications to PRC-024
- NERC Project 2020-04: CIP-012 Draft #4
- NERC Project 2020-06: Verification of Models and Data for Generators – IBR Glossary Terms
- NERC Project 2021-02: VAR-002 Draft #3
- NERC Project 2021-03: CIP-002 Draft #1
- NERC Project 2021-04: Modifications to PRC-002
- NERC Project 2021-07: Extreme Cold Weather Grid Operations, Preparedness, and Coordination
- NERC Project 2021-08: FAC-008-6 Draft #1
- NERC Project 2022-02: MOD-032 Draft #2
- NERC Project 2023-02: Performance of IBRs
- NERC Project 2023-03: INSM CIP-007-X Draft #1
- NERC Project 2023-04: CIP-003 Draft #1

The NAGF participated in the following FERC and NERC meetings/webinars:

- FERC Reliability Technical Conference
- NERC Reliability and Security Technical Committee (RSTC)
- NERC Energy Reliability Assurance Task Force (ERATF)
- NERC Trades Meetings

The NAGF and NERC held the following discussions:

- NERC GO/GOP IBR registration activities status and possible ways the NAGF can support NERC's efforts to register non-BES IBR entities as well as the NAGF being a resource for such entities.
- Reviewed use of 6GHZ communication at generator equipment/facilities.

The 13th Annual North American Generator Forum GENerating Reliability and Resiliency Compliance Conference was held on October 10 - 12, 2023 at NERC's offices in Atlanta, GA. The theme for this year's virtual meeting was generator reliability and resiliency. Presentations included:

- CIP-003-9 Considerations
- Project 2021-07 Extreme Weather Update
- Winter Storm Elliott Report Update
- PRC-024 and EMT Modeling
- PRC-027 Coordination between TO and GO
- NERC Inverter Based Resources Strategy
- Generator Failure Modes and Mechanisms: Calculating ECWT with Messy or Incomplete Data

Agenda Item 8a
Board of Trustees Meeting
February 15, 2024

# Project 2022-01 Reporting ACE Definition and Associated Terms

## Action

Adopt the following new terms, modified definitions of terms, and retirement of terms used in the NERC Glossary of Terms, and authorize staff to file with applicable regulatory authorities:

- Proposed Modified Definitions of Terms used in the *Glossary of Terms used in NERC Reliability Standards clean and redline:*
  - Actual Net Interchange ($NI_A$)
  - Area Control Error (ACE)
  - Automatic Time Error Correction (ATEC)
  - Balancing Authority Area (BAA)
  - Balancing Contingency Event (BCE)
  - Control Performance Standard (CPS)
  - Disturbance
  - Dynamic Interchange Schedule or Dynamic Schedule
  - Frequency Bias Setting (FBS)
  - Frequency Error
  - Implemented Interchange
  - Inadvertent Interchange
  - Interchange Meter Error -($I_{ME}$)
  - Operating Reserve – Spinning
  - Operating Reserve – Supplemental
  - Overlap Regulation Service
  - Pseudo-Tie
  - Ramp Rate or Ramp
  - Regulation Service
  - Reportable Balancing Contingency Event (RBCE)
  - Reporting Area Control Error (Reporting ACE)
  - Reserve Sharing Group (RSG)
  - Reserve Sharing Group Reporting ACE
  - Scheduled Frequency
  - Scheduled Net Interchange ($NI_S$)
  - Supplemental Regulation Service
  - Tie Line Bias (TLB)

    - Time Error (TE)
    - Time Error Correction (TEC)
- New Definitions of Terms used in the *Glossary of Terms used in NERC Reliability Standards*
    - ACE Diversity Interchange (ADI)
    - Inadvertent Interchange Management ($I_{IM}$)
- Retirements of Terms used in the *Glossary of Terms used in NERC Reliability Standards*
    - Disturbance Control Standard
    - Net Interchange Schedule
    - Net Scheduled Interchange
    - Reportable Disturbance
- Implementation Plan

## Background

NERC initiated Project 2022-01, Reporting ACE Definition and Associated Terms, following the submission of a Standard Authorization Request (SAR) by the NERC Reliability and Security Technical Committee Resources Subcommittee (Resources Subcommittee). The Resources Subcommittee noted that the Eastern Interconnection was experiencing a large amount of accumulated time error and that the current NERC Glossary definition of Reporting ACE does not allow Interconnections outside of the Western Interconnection to pursue Automated Time Error Correction (ATEC) processes. In addition, if average Frequency and Time Error were better controlled, there would be less need for manual Time Error Corrections, thereby improving reliability.

The Resources Subcommittee recommended improving the definition of Reporting ACE to improve long-term average frequency performance and allow Interconnections beyond the Western Interconnection to pursue ATEC or similar functions. The Resources Subcommittee also recommended clarifying and improving associated NERC Glossary terms.

## Summary

To address the goals of the SAR, the Project 2022-01 Reporting ACE Definition and Associated Terms standard drafting team (DT) proposed the creation of two new defined terms, the revision of 29 existing defined terms, and the retirement of four NERC Glossary terms. The changes to the NERC Glossary definitions of Reporting ACE and associated terms will allow all interconnections to implement ATEC processes and reduce confusion on what components make up the Area Control Error used for reporting. Changes to the definitions of the NERC Glossary terms associated with Reporting ACE provide clarity and consistency in language and definitions.

## Standards Development Process

The proposed definitions were posted for an initial 45-day formal comment period and ballot from January 31 – March 16, 2023.[1] All terms passed in the initial ballot with a 69.73% or higher approval rate. Based on the comments received, the drafting worked on additional edits to the terms that necessitated an initial ballot for ACE Diversity Interchange (ADI) and an additional ballot for Inadvertent Interchange Management ($I_{IM}$) and Reporting Area Control Error (Reporting ACE). These were also posted for a 45-day formal comment and ballot from September 14 – October 30, 2023.

The DT conducted a final ballot on the proposed new and revised terms from December 11, 2023 through December 20, 2023.[2] All the terms passed the final ballot with an approval rating of 73.16% or above.

The ballot results for the last additional ballot and final ballot (i.e., prior to the final ballot) for each standard are below.

| | Initial Ballot | Initial Ballot | Additional Ballot | Final Ballot |
|---|---|---|---|---|
| **Definition** | **Quorum / Approval (01/31-03/16/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (12/12 - 12/20/23)** |
| Area Control Error Diversity Interchange (ADI) | - | 82.27% / 91.67% | - | 84.09% / 95.64% |
| Inadvertent Interchange Management (IIM) | 85.04% / 73.60% | - | 83.33% / 96.16% | 87.61% / 96.28% |
| Modified - Actual Net Interchange (NIA) | 85.04% / 97.37% | - | - | 88.03% / 97.45% |
| Modified - Area Control Error (ACE) | 85.47% / 70.32% | - | - | 88.46% / 73.16% |

[1] The initial ballot included the following terms and the associated implementation plan: Inadvertent Interchange Management ($I_{IM}$), Actual Net Interchange ($NI_A$), Area Control Error (ACE), Automatic Time Error Correction (ATEC), Balancing Authority Area (BAA), Balancing Contingency Event (BCE), Control Performance Standard (CPS), Disturbance, Dynamic Interchange Schedule or Dynamic Schedule, Frequency Bias Setting (FBS), Frequency Error, Implemented Interchange, Inadvertent Interchange, Interchange Meter Error ($I_{ME}$), Operating Reserve – Spinning, Operating Reserve – Supplemental, Overlap Regulation Service, Pseudo-Tie, Ramp Rate or Ramp, Regulation Service, Reportable Balancing Contingency Event (RBCE), Reporting Area Control Error (Reporting ACE), Reserve Sharing Group (RSG), Reserve Sharing Group Reporting ACE, Scheduled Frequency, Scheduled Net Interchange ($NI_S$), Supplemental Regulation Service, Tie Line Bias (TLB),Time Error (TE), Time Error Correction (TEC), Disturbance Control Standard, Net Actual Interchange, Net Interchange Schedule, Net Scheduled Interchange, and Reportable Disturbance.

[2] For the final ballot, the DT discontinued the proposed retirement of the NERC Glossary term Net Actual Interchange, as the term is still being used in a currently effective NERC Reliability Standard. That Reliability Standard is presently undergoing revision under a separate project; if appropriate, the retirement may be pursued through that project.

| | Initial Ballot | Initial Ballot | Additional Ballot | Final Ballot |
|---|---|---|---|---|
| **Definition** | **Quorum / Approval (01/31-03/16/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (12/12 - 12/20/23)** |
| Modified - Automatic Time Error Correction (ATEC) | 85.47% / 97.55% | - | - | 88.46% / 97.65% |
| Modified - Balancing Authority Area (BAA) | 85.11% / 97.94% | - | - | 88.51% / 97.99% |
| Modified - Balancing Contingency Event (BCE) | 85.47% / 99.60% | - | - | 88.46% / 99.60% |
| Modified - Control Performance Standard (CPS) | 85.47% / 96.32% | - | - | 88.46% / 96.43% |
| Modified - Disturbance | 85.11% / 99.61% | - | - | 88.51% / 99.61% |
| Modified - Dynamic Interchange Schedule or Dynamic Schedule | 85.47% / 97.75% | - | - | 88.46% / 97.81% |
| Modified - Frequency Bias Setting (FBS) | 85.47% / 97.79% | - | - | 88.46% / 97.85% |
| Modified - Frequency Error | 97.79% / 99.61% | - | - | 88.46% / 99.61% |
| Modified - Implemented Interchange | 85.47% / 99.61% | - | - | 88.46% / 99.61% |
| Modified - Inadvertent Interchange | 85.47% / 99.20% | - | - | 88.46% / 99.21% |

| | Initial Ballot | Initial Ballot | Additional Ballot | Final Ballot |
|---|---|---|---|---|
| **Definition** | **Quorum / Approval (01/31-03/16/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (12/12 - 12/20/23)** |
| Modified - Interchange Meter Error (IME)[3] | 85.47% / 98.24% | - | - | 88.89% / 98.23% |
| Modified - Operating Reserve – Spinning | 85.47% / 99.51% | - | - | 88.46% / 99.51% |
| Modified - Operating Reserve – Supplemental | 85.47% / 99.52% | - | - | 88.46% / 99.52% |
| Modified - Overlap Regulation Service | 85.47% / 97.75% | - | - | 88.46% / 97.81% |
| Modified - Pseudo-Tie | 85.41% / 99.61% | - | - | 88.41% / 99.61% |
| Modified - Ramp Rate or Ramp | 85.41% / 99.61% | - | - | 88.41% / 99.61% |
| Modified - Regulation Service | 85.41% / 99.60% | - | - | 88.41% / 99.60% |
| Modified - Reportable Balancing Contingency Event (RBCE) | 85.41% / 97.82% | - | - | 88.41% / 97.82% |
| Modified - Reporting Area Control Error (Reporting ACE) | 85.41% / 69.73% | - | 83.26% / 92.80% | 87.55% / 94.86% |
| Modified - Reserve Sharing Group (RSG) | 85.41% / 99.61% | - | - | 88.41% / 99.61% |

[3] The final ballot for this term was inadvertently conducted in NERC's balloting system as an additional ballot, instead of a final ballot. NERC staff manually verified the results in accordance with NERC's rules for final ballots.

| | Initial Ballot | Initial Ballot | Additional Ballot | Final Ballot |
|---|---|---|---|---|
| **Definition** | **Quorum / Approval (01/31-03/16/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (12/12 - 12/20/23)** |
| Modified - Reserve Sharing Group Reporting ACE | 85.04% / 99.60% | - | - | 88.46% / 99.60% |
| Modified - Scheduled Frequency | 85.41% / 99.61% | - | - | 88.41% / 99.61% |
| Modified - Scheduled Net Interchange (NIS) | 85.41% / 97.84% | - | - | 88.41% / 97.89% |
| Modified - Supplemental Regulation Service | 85.41% / 99.60% | - | - | 88.41% / 99.60% |
| Modified - Tie Line Bias (TLB) | 85.41% / 99.59% | - | - | 88.41% / 99.59% |
| Modified - Time Error (TE) | 85.41% / 97.84% | - | - | 88.41% / 97.89% |
| Modified - Time Error Correction (TEC) | 85.41% / 99.59% | - | - | 88.41% / 99.59% |
| Retirement - Disturbance Control Standard | 84.98% / 99.60% | - | - | 87.98% / 99.60% |
| Retirement - Net Actual Interchange[4] | 84.98% / 99.60% | - | - | Discontinued- |
| Retirement - Net Interchange Schedule | 84.98% / 99.60% | - | - | 87.98% / 99.60% |
| Retirement - Net Scheduled Interchange | 84.98% / 99.60% | - | - | 87.98% / 99.60% |

[4] For the final ballot, the DT discontinued the proposed retirement of the NERC Glossary term Net Actual Interchange, as the term is still being used in a currently effective NERC Reliability Standard. That Reliability Standard is presently undergoing revision under a separate project; if appropriate, the retirement may be pursued through that project.

| | Initial Ballot | Initial Ballot | Additional Ballot | Final Ballot |
|---|---|---|---|---|
| **Definition** | **Quorum / Approval (01/31-03/16/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (09/14 - 10/30/23)** | **Quorum / Approval (12/12 - 12/20/23)** |
| Retirement - Reportable Disturbance | 84.62% / 99.60% | - | - | 88.03% / 99.60% |
| Implementation Plan | 84.65% / 92.39% | - | - | 88.16% / 93.98% |

**Minority Issues**
Several commenters stated that the proposed changes did not go far enough to achieve the project's stated goals within the Eastern Interconnection. The DT reviewed the comments and determined that the proposed changes were sufficient to achieve the project goals set forth by the Resources Subcommittee.

**Pertinent FERC Directives**
None.

**Cost Effectiveness**
No comments were received regarding cost concerns, and the DT does not anticipate significant costs.

**Additional Information**
A link to the project history and files is included here for reference:
Project 2022-01 Reporting ACE Definition and Associated Terms

Agenda Item 8b
Board of Trustees Meeting
February 15, 2024

# Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination

## Action

Adopt the following standards documents and authorize staff to file with applicable regulatory authorities:

- Reliability Standard – EOP-012-2 – Extreme Cold Weather Preparedness and Operations
  - Redline to the last approved
- Proposed New/Revised Definitions for Inclusion in the *Glossary of Terms used in NERC Reliability Standards*:
  - Generator Cold Weather Critical Component
  - Fixed Fuel Supply Component
  - Generator Cold Weather Reliability Event
  - Generator Cold Weather Constraint
- Implementation Plan
- Violation Risk Factors (VRFs) and Violation Severity Levels (VSLs)
- Retirements

  EOP-012-1 Extreme Cold Weather Preparedness and Operations

## Background

From February 8 – 20, 2021 extreme cold weather and precipitation affected the south-central United States. Large numbers of generating units experienced outage derate or failure to start, resulting in energy and transmission emergencies (referred to as the Event). The total Event firm load shed was the largest controlled firm load shed event in U.S. history and was the third largest in quantity of outaged megawatts (MW) of load after the August 2003 northeast blackout and the August 1996 west coast blackout.

In response to the Event, a joint inquiry team was put together consisting of individuals from the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), Regional Reliability Entities Midwest Reliability Organization (MRO), Northeast Power Coordinating Council (NPCC), ReliabilityFirst Corporation (RF), SERC Corporation (SERC), Texas Reliability Entity (Texas RE) and Western Electricity Coordinating Council (WECC), as well as the Department of Energy (DOA) and the National Oceanic and Atmospheric Administration (NOAA). In a joint report issued in November 2021, the team made 10 recommendations for NERC Reliability Standards revisions with two proposed, staggered timeframes. In November 2021, the NERC Board of Trustees (Board) issued a resolution for the development of standards under this project to be completed in accordance with the staged timelines recommended by the team. The project was split into two phases to address these recommendations.

In October 2022, the Board approved Reliability Standards EOP-011-3 and EOP-012-1, which concluded phase one work. FERC approved the phase one Reliability Standards on February 16, 2023 (2023 Order).[1] In its 2023 Order, FERC directed further changes to Reliability Standard EOP-012-1 and its associated implementation plan and directed that these changes be submitted within one year of the order date. While phase two work was underway,[2] NERC initiated phase three to address the directives for EOP-012-1 set forth in the 2023 Order.

## Summary

The proposed revised EOP-012-2 standard, along with the associated implementation plan and five new/revised terms for inclusion in the Glossary of Terms used in NERC Reliability Standards, address a remaining phase two recommendation from the joint report and the FERC directives in the 2023 Order. The revisions from the previous versions are summarized as follows:

### Defined Terms

EOP-012-2 includes a detailed definition of the term Generator Cold Weather Constraint to replace the phrase "technical, commercial, or operational constraint" in EOP-012-1 to describe the circumstances under which a generator owner may determine not to implement corrective action plan measures. This definition is based generally on the concepts of "good utility practice" and is intended to set a high bar consistent with the goals of the standard and the 2023 Order.

The definition of Generator Cold Weather Realiblity Event was modified to include the impacts of freezing precipitation consistent with the recommendations of the joint report.

The definition of Generator Cold Weather Critical Component was modified to exclude any component or system located inside a permanent building with a heating source to accommodate those units built indoors. Related to this, the drafting team (DT) created a new definition of Fixed Fuel Supply Component, which is used in the definition of Generator Cold Weather Critical Component to cover non-mobile equipment that supports the delivery of fuel and is under the control of the Generator Owner. These revisions provide added clarity to the standard.

### Applicability and Requirements

The applicable facilities section and requirements were modified in response to the 2023 Order; these modifications are intended to (1) capture all Bulk Electric System generation resources needed for reliable operation and exclude from the winterization requirements only those generation resources not relied upon during freezing conditions; and (2) ensure all BES generation resources are preparing cold weather preparedness plans, to include calculating their cold weather operating parameters and performing training on those plans, consistent with the requirements of the EOP-011-2 standard currently in effect.

EOP-012 Requirement R2 has been modified to provide that intermittent energy resources should have the capability to provide as much generation as operationally possible if their maximum operational duration is less than 12 hours. The 2023 Order noted that the 12-hour requirement in EOP-012-1 could be read to exclude such facilities from providing any capability. Additionally, Requirement R3 was modified to remove the 1-hour statement to remove any

[1] *N. Am. Elec. Reliability Corp.*, 182 ¶ 61,094 (2023) (approving Reliability Standards EOP-011-3 and EOP-012-1 and directing further revisions).

[2] The Board adopted proposed Reliability Standards EOP-011-4 and TOP-002-5 on October 23, 2023 to complete the phase 2 work. These proposed Reliability Standards are currently pending FERC approval.

confusion that generating units only need to operate for 1 hour at their Extreme Cold Weather Temperature.

**Implementation of Freeze Protection Measures**

To address the 2023 Order's directive to develop corrective action plan deadlines for addressing freeze protection issues or operations capability issues, the DT included 24- and 48-month timetables in Requirement R7 for addressing existing versus new freeze protection measures.

Additionally, the implementation plan for the EOP-012 standard has been revised to shorten the implementation period for winterization measures to 12 months across an entire fleet. These revisions ensure that the actions are completed in a more expeditious manner and that more units are reliable year after year.

**Requirement R8**

The 2023 Order directed NERC to "identify the appropriate entity that would receive the generator owner's constraint declarations."[3] The DT believes that the intent of this language is for identified operating limitations to be provided to necessary entities who have a wide area view (i.e., Balancing Authorities or Reliability Coordinators) and are responsible for grid planning and reliability. Thus, Requirement R8 has been drafted to require Generator Owners to update the operating limitations provided via data specification to the entities overseeing reliability (e.g., Balancing Authority, Transmission Operator, or Reliability Coordinator). In this manner, information relevant to the constraint declarations is made available to the planning and operational entities pursuant to its data collection authority contained in TOP-003 and IRO-010.

## Standards Development Process

The initial 45-day formal comment and ballot was conducted from June 5 – July 20, 2023. The initial EOP-012-2 ballot received 43.47 percent approval and 90.7 percent quorum. The implementation plan received 50.96 percent approval and 90.91 percent quorum. The DT made additional changes to the standard based on comments received.

On August 23, 2023, the Standards Committee approved a waiver under Section 16.0 of the Standard Processes Manual authorizing additional formal comment and ballot period (s) to be reduced from 45 days to as little as 20 days, with ballot conducted during the last 10 days of the comment period and final ballot reduced from 10 days to five calendar days.

A 35-day formal comment and second ballot for EOP-012-2 was conducted October 27 – November 30, 2023. The second draft, the EOP-012-2 standard, received 58.86 percent approval and 89.30 percent quorum. The implementation plan received 68.44 percent approval and 89.49 percent quorum.

On December 13, 2023, the Standards Committee approved an additional waiver, further reducing additional formal comment and ballot period(s) to as little as 10 days, with the ballot conducted in the last five days of the comment period. The DT reviewed comments received and made additional changes for a third ballot. The 13-day formal comment and third ballot was conducted from January 10 – 22, 2024. The EOP-012-2 ballot received 81.02 percent approval and 87.71 percent quorum. The implementation plan received 88.62 percent approval and 87.21 percent quorum.

[3] 2023 Order at P 66.

The 5-day final ballot will be conducted from February 5 – 10, 2024.

**Minority Issues**

Some commenters expressed concern that the standard should exclude certain categories of generation or entities that have demonstrated consistently satisfactory performance in cold weather.

A few comments asserted that no new/additional cold weather standards should be implemented until market rules addressing cold weather-related BES emergencies are established by FERC or cost recovery mechanisms for needed infrastructure investments are approved by FERC or state regulators.

The DT noted its charge was to develop Reliability Standards to address the standards-related recommendations from the joint report. In response to comments, the DT revised draft EOP-012-2 to better account for industry concerns that the standard may place too much of an administrative burden on generators who have successfully performed in cold weather. The DT developed requirements that do not discriminate against any type of generator of market type; the DT determined that excluding certain categories of generation would be inconsistent with the findings and recommendations of the joint report.

Other commenters asserted that the proposed constraint definition is still too ambiguous or that the constraint declarations themselves should be reported to reliability entities. The DT endeavored to balance the various comments and believes the current language on constraints provides significantly more clarity than the EOP-012-1 standard regarding constraints, and Requirement R8 addresses reporting of the operational considerations associated with declaring a constraint to the reliability entities.

**Pertinent FERC Directives**

**See** Order Approving Extreme Cold Weather Reliability Standards EOP-011-3 and EOP-012-1 and Directing Modification of Reliability Standard EOP-012-1.

**Cost Effectiveness**

The DT team sought stakeholder input on the cost effectiveness of the proposed standards during the formal comment periods. A handful of comments argued that the new standard will place an additional burden on entities already operating effectively in cold weather areas. The DT believes its proposed language provides flexibility to applicable entities to meet the requirements in a cost-effective manner.

**Additional Information**

A link to the project history and files is included here for reference:
[Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination]

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Standards Actions

Soo Jin Kim, Vice President, Engineering, Standards, and PRISM
Board of Trustees Meeting
February 15, 2024

**RELIABILITY | RESILIENCE | SECURITY**




# Project 2022-01 Reporting ACE Definition and Associated Terms

- Background
  - NERC initiated project 2022-01, Reporting ACE Definition and Associated Terms, following the submission of a Standard Authorization Request (SAR) by the NERC Reliability and Security Technical Committee (Resources Subcommittee (RS)). The RS noted that the Eastern Interconnection was experiencing a large amount of accumulated time error and that the current NERC Glossary definition of Reporting ACE does not allow other Interconnections outside of the Western Interconnection to pursue Automatic Time  Error Correction (ATEC) processes.
  - The RS recommended improving the definition of Reporting ACE, and associated terms, to improve long-term average frequency performance and allow Interconnections, beyond the Western Interconnection, to pursue ATEC or similar functions.

# Project 2022-01 Reporting ACE Definition and Associated Terms

- Revisions
  - Modify the NERC Glossary of terms to include two newly defined terms, ACE Diversity Interchange, and Inadvertent Interchange Management; revise 29 existing terms and retire four existing terms.

# Project 2022-01 Reporting ACE Definition and Associated Terms

- Reliability Benefits
  - The changes to the NERC Glossary definition of Reporting ACE and related terms will allow all interconnections to implement an automated time error correction process and reduce confusion on what components make up the Area Control Error used for reporting. Making the Automatic Time Error Correction (ATEC) term generic (as opposed to Western Interconnection-specific) will accommodate other acceptable approaches. Changes are also proposed to the definitions of related NERC Glossary terms to provide clarity and consistency in language and definitions.

# Project 2022-01 Reporting ACE Definition and Associated Terms

- Action
  - Adopt
    - Proposed Modified Definitions of Terms used in the *Glossary of Terms used in NERC Reliability Standards*
    - New Definitions of Terms used in the *Glossary of Terms used in NERC Reliability Standards*
    - Retirements of Terms used in the *Glossary of Terms used in NERC Reliability Standards*

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# Extreme Cold Weather Update

RELIABILITY | RESILIENCE | SECURITY




# Project 2021-07 Extreme Cold Weather

- Background
  - The purpose of Project 2021-07 Phase three was to address one remaining Key Recommendations (1c) from the Joint Inquiry Report and five directives from the February 16, 2023 FERC Order
  - The team had a February 16, 2024 deadline to complete drafting to meet the FERC order

# Project 2021-07 Extreme Cold Weather

- Requirements of EOP-012-2
  - Revised/created four new NERC Glossary Terms, Generator Cold Weather Critical Component, Fixed Fuel Supply Component, Generator Cold Weather Reliability Event (GCWRE), and Generator Cold Weather Constraint
  - R1 requires all generators to calculate the Extreme Cold Weather Temperature (ECWT) for their plant every five years and, should the new ECWT be lower than the previously calculated ECWT and need additional freeze protection measure to reach that number, develop a CAP
  - R2 and R3 require new or existing generators, delineated by an October 1, 2027 date, to implement freeze protection measures to operate to the ECWT if it is below 32 degrees Fahrenheit or develop a Corrective Action Plan to add freeze protection measures to operate at the ECWT

# Project 2021-07 Extreme Cold Weather

- Requirements of EOP-012-2
  - R6 requires any Generator Owner (GO) that experiences a Generator Cold Weather Reliability Event to develop a CAP within 150 days of the event by July 1, which includes a review of similar equipment at other generating units owned by the GO
  - R7 includes the requirements of the Corrective action plan (CAP) that could have been initiated in R1, R2, R3, or R6 and has a provision for the GO to declare a Generator Cold Weather Constraint that precludes the GO from implementing the selection actions in the CAP
  - R8 requires the Generator Cold Weather Constraint to be reviewed every five years or when a change of status occurs and update any associated operating limits listed in R1, which are included in the cold weather preparedness plan

# Project 2021-07 Extreme Cold Weather

- Reliability Benefits of EOP-012-2
  - Clarified the applicability of the standard ensuring all BES generation develop cold weather preparedness plans and ensure training is completed annually
  - Created criteria for constraints for when entities are unable to implement specific actions from a Corrective Action Plan
  - Shortened the Implementation Plan and included deadlines for Corrective Action Plan completion providing for quicker reliability benefits

# Project 2021-07 Extreme Cold Weather

- Action
  - Adopt
    - Reliability Standard – EOP-012-2 – Extreme Cold Weather Preparedness and Operations

# Questions and Answers

# Proposed Revisions to the NERC Rules of Procedure – Registration

## Action

Approve

- **Appendix 2 (Definitions)**

  Clean

  Redline to last approved

- **Appendix 5A (Organization Registration and Certification Manual)**

  Clean

  Redline to last approved

- **Appendix 5B (Compliance Registry Criteria)**

  Clean

  Redline to last approved

## Background

On November 17, 2022, the Federal Energy Regulatory Commission (FERC) directed NERC to submit a work plan describing how it plans to identify and register owners and operators of inverter-based resources (IBRs) that are connected to and have a material impact in the aggregate on the Bulk-Power System (BPS), but are not currently required to register with NERC under the bulk electric system (BES) definition.[1] On February 15, 2023, as amended in March 2023, NERC filed a Work Plan outlining concepts and milestones to achieve that directive.

On May 18, 2023, FERC accepted the Work Plan. NERC has filed Work Plan updates every 90 days thereafter. NERC posted its proposed revisions to Appendices 2, 5A, and 5B of the NERC Rules of Procedure (ROP) for a 45-day public comment period between September 13 – October 30, 2023. The substance of NERC's proposal is consistent with the Work Plan filings and the September 13th posting, although NERC has improved the organizational structure and made other clarifying edits in response to comments. NERC appreciates stakeholder feedback and participation throughout this ROP development process.

## Summary

NERC staff thanks stakeholders for their support throughout this project to address registration of owners and operators of materially impactful BPS-connected, non-BES, IBRs in accordance with FERC directive. Stakeholder feedback throughout the November 2022 – January 2023 time period has been integral to shaping this proposal before the Board. We look forward to continuing to work together on this initiative.

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[1] *Registration of Inverter-Based Resources*, 181 FERC ¶ 61,124 (2022) (Registration Order); *and Order Approving Registration Work Plan*, 183 FERC ¶ 61,116 (2023) (Work Plan Approval Order). Please see Docket No. RD22-4 *et. al.* for the full record in this proceeding.

The following revisions would expand the Generator Owner (GO) and Generator Operator (GOP) Registry Criteria to address unregistered IBRs and make other conforming changes. In particular, the ERO Enterprise would expand the Registry Criteria for GO and GOP to require registration of entities that own or operate: non-BES inverter based generating resources that have an aggregate nameplate capacity of greater than or equal to 20 MVA connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV. These new entrants would become category 2 GOs or GOPs. In response to Comments on the September posting, and as discussed below, NERC's proposal revises the organization of its draft to integrate the Registry Criteria updates directly into the GO/GOP criteria rather than using the GO-IBR or GOP-IBR nomenclature.[2]

NERC takes this opportunity to also clarify that the proposed revisions do not affect distributed energy resources, synchronous resources, or IBRs which in aggregate would not have a material impact on reliability of the BPS. The materiality thresholds embedded in the proposed Registry Criteria updates were carefully tailored with the help of stakeholders to only affect impactful BPS-connected IBR resources in accordance with FERC directive. The proposed revisions would also not alter the BES Definition or Reliability Standards. While NERC anticipates that if the Board (and thereafter FERC) approve the ROP revisions, there would be a Glossary alignment Standards project, such a project and any others (including those pursued in accordance with FERC Order No. 901) will all proceed in accordance with Appendix 3A of the ROP (the Standards Process Manual). NERC looks forward to collaborating with stakeholders on those Standards projects.

As a result, NERC proposes the following revisions to Appendix 2 (Definitions), Appendix 5A (Organization Registration and Certification Manual), and Appendix 5B (Statement of Compliance Registry Criteria):

**Appendix 2 – Definitions**

GO and GOP Definitions: To align the ROP definitions for these functions with the revisions proposed to Appendix 5B (Statement of Registry Criteria), NERC proposes include an insert that mirrors the GO/GOP Registry Criteria update in Appendix 5B.

Reserve Sharing Group (RSG) Definition: For alignment, NERC proposes to revise the RSG definition to mirror the revised definition being proposed in Project 2022-01 Reporting ACE Definition and Associated Terms. Incorporating these revisions would support administrative efficiency.

Board of Trustees Compliance Committee Definition: NERC proposes to reflect those references to the "Board of Trustees Compliance Committee," "BOTCC" or "Compliance Committee" means the Compliance Committee of the NERC Board of Trustees or its successor. This supports NERC's recent updates to its governance model establishing the Regulatory Oversight Committee (ROC) as the successor to the BOTCC in an administratively efficient manner (rather than replacing BOTCC with ROC everywhere that it might appear within the ROP).

[2] There are also updates to the definition of Reserve Sharing Group and Board of Trustees Compliance Committee Definition to align with other changes.

**Appendix 5A – Organization Registration and Certification Manual**

Facilities terminology: Changing "Facilities" throughout to "facilities" to reflect NERC's scope of authority to register entities that own, operate, or use BPS assets consistent with the revisions in Appendix 5B and NERC's jurisdiction pursuant to section 215 of the Federal Power Act over users, owners, and operators of the BPS.

Section VI: NERC has included clarifying language that *de novo* review applies to the BOTCC review of Registration appeals. This would clarify that per existing practice *de novo* review is applied to Registration appeals.

**Appendix 5B – Statement of Compliance Registry Criteria**

GO / GOP Registry Criteria: NERC proposes to revise GO and GOP Registry Criteria to include a new category. These functions would address registration of the entity that i) owns and maintains or ii) operates non-BES inverter-based generating resources that have an aggregate nameplate capacity of greater than or equal to 20 MVA delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV. As described in Docket No. RD22-4, through several assessments, event reports, and studies, NERC has determined that organizations which own or operate unregistered IBRs that i) aggregate to nameplate capacity equal or greater than 20 MVA; at ii) a common point of connection at a voltage greater than or equal to 60 kV, are material to the Reliable Operation of the interconnected BPS.[3] In response to comments on NERC's September 13th posting, NERC revised its proposal to reflect updates to the GO and GOP Registry Criteria directly rather than creation of associated GO-IBR and GOP-IBR functions. This clarification should avoid concerns regarding duplicative registration or compliance monitoring and enforcement for entities with more than one registered function associated with resource ownership or operation. This structure (consistent with the filed Work Plan and updates) is also anticipated to be a helpful foundation conceptually for future Reliability Standards projects.

RSG Registry Criteria: NERC proposes to revise the RSG function definition to be consistent with the revised definition being proposed in Project 2022-01. Including this update as part of the ROP Registry Criteria revisions would support administrative efficiency.

Introductory Materials: NERC has removed portions of the legislative history from the background portions of Appendix 5B. This would eliminate legacy information that is no longer necessary for understanding the Registry Criteria.

Conforming changes: NERC proposes to revise the Registry Criteria to remove duplicative information, clarify Section I of the Criteria to make clear that owners, operators, or users of the BPS are candidates for Registration.

Determination of Material Impact Notes: In response to comments on the September 13th posting, NERC has updated these notes on materiality review to ensure clarity that the NERC-Led Review Panel process would be available to category 2 GOs and GOPs. This is important to clarify the availability of this process to all registered entities.

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[3] ERO Enterprise BPS Resource Trends Task Force, *Analysis of the Changing Mix of Generating Resources on the BPS* (Feb. 2023), available as Attach. 2 of NERC's work plan filing. *N. Am. Elec. Reliability Corp.*, (Feb. 15, 2023) Docket No. RD22-4-000, https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/IBR%20Registration%20Work%20Plan_final.pdf .

**Development Process**

As detailed in Work Plan Updates and reflected on NERC's website, NERC engaged in extensive stakeholder outreach as it considered approaches to address unregistered IBRs as directed by the Commission.[4] Prior to posting the proposal for public comment, for example, NERC hosted an informational webinar on July 12, 2023. NERC posted the proposed ROP revisions on its webpage from September 13, 2023 through October 30, 2023. The posting included a clean and redline of ROP Appendices 2, 5A, and 5B, as well as a summary document detailing the revisions and justifications.

In parallel with the posting, NERC also issued a series of supporting materials to aid in understanding. These materials included a summary of the proposed revisions, an overview of frequently asked questions, a quick reference guide for new candidates, and a webinar as part of the IBR webinar series.

The proposed revisions align with the anticipated elements laid out in stakeholder meetings, the Work Plan Filing, and Work Plan filing updates, with clarifications based on stakeholder comment.

**Minority Issues**

Some commenters prefer establishing a wholly new function for category 2 GOs / GOPs, on the basis that it would be clearer. While NERC appreciates this feedback, after carefully evaluating this approach in the context of all comments submitted on the September posting, NERC determines that directly modifying the GO/GOP Registry Criteria will be clearer and avoid potentially duplicative registered functions and associated compliance monitoring and enforcement concerns. Reliability Standards revisions would be necessary in the future under NERC's proposed approach or a wholly new function.[5]

Staff's consideration of minority issues is reflected in the posted Consideration of Comments.

**Pertinent FERC Directives**

In the Registration Order, FERC determined as a result of evidence on the changing resource mix:

> *Therefore, we find that it is necessary to ensure that unregistered IBRs that may have an aggregate material impact on the reliable operation of the Bulk-Power System are required to: (1) register with NERC, and (2) comply with NERC Reliability Standards. Hence, we direct NERC, pursuant to our authority under FPA section 215,[6] to submit for Commission approval within 90 days a work plan describing in detail how NERC plans to identify and register unregistered IBRs that, in the aggregate, have a material impact on the reliable operation of the Bulk-Power System. The work plan should explain how NERC will modify its processes to encompass unregistered IBRs (whether by working with stakeholders to change the BES definition, a change to its registration program, or some*

[4] *See, e.g.*, North Am. Elec. Reliability Corp., Docket No. RD22-4-001, (November 14, 2023) (Work Plan Update #2) (including a description of outreach activities).

[5] *See, e.g.*, Order Approving Work Plan, at P 57 (stating, "Implementation details for Reliability Standard development, such as applicability, capability-based requirements, and criteria that may be used to clarify those facilities and/or components excluded from mandatory compliance obligations with specific standards and/or requirements are better addressed through NERC's standards development process. As required by the FPA, the Commission would consider whether NERC's proposed Reliability Standard is just, reasonable, not unduly discriminatory, or preferential, and in the public interest when determining whether to approve the proposed new or modified Reliability Standard.").

[6] 16 U.S.C. 824o(b)(1). *See also* 18 CFR 39.2(d) (2021) (the ERO shall provide the Commission information as necessary to implement section 215 of the FPA).

*other solution) within 12 months of approval of the work plan. The work plan should also include implementation milestones ensuring that unregistered IBR owners and operators meeting the new registration criteria are identified within 24 months of the approval date of the work plan, and that they are registered and required to comply with applicable Reliability Standards within 36 months of the approval date of the work plan. The work plan will be noticed for public comment. Once the Commission approves the work plan, NERC must file updates every 90 days thereafter detailing its progress towards identifying and registering owners and operators of IBRs (e.g., the number or percentage of entities identified and/or registered and anticipated completion date if changed, with an explanation of any such change).*[7]

In the Order Approving Work Plan, FERC stated:

> *We approve NERC's work plan to modify its Rules of Procedure and Registry Criteria to identify and register owners and operators of unregistered IBRs connected to the Bulk-Power System. We find that NERC's work plan and associated timetable address the directives set forth in the Commission's IBR Registration Order. We agree that NERC's work plan timetable with its corresponding milestones and periodic Commission updates, as well as NERC's stakeholder communication plan, should ensure an efficient process towards identifying and registering relevant entities*.[8]

**Additional Information**

A link to project history and files is included here for reference:
Organization Registration and Organization Certification (nerc.com)

[7] Registration Order, at P 6.
[8] Order Approving Work Plan, at P 24.

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# Proposed Revisions to NERC Rules of Procedure – Registration

Howard Gugel, Vice President, Compliance Assurance and Registration
Candice Castaneda, Senior Counsel
Board of Trustees Meeting
February 15, 2024

**RELIABILITY | RESILIENCE | SECURITY**




# Background

- NERC staff analysis of IBRs in 2021-2022
- FERC IBR Order – November 17, 2022
- Work plan and white paper filed with FERC – February 15, 2023
  - Proposed >= 20 MW and >= 60 kV criteria
  - Registration changes, then Reliability Standard changes
- May 18, 2023:  FERC Order approved work plan
  - Work plan updates every quarter
- Rules of Procedure changes consistent with registration criteria
- All Reliability Standard modifications will use approved Standard Processes Manual

# Development Process

- Revision process ran from September 2023 – January 2024
- Proposed redlines posted for 45-day public comment
- Revisions made in response to comments received
- Final Version Posted:  January 22, 2024
  - Consideration of Comments included in posting

Rules of Procedure (nerc.com) and https://www.nerc.com/pa/comp/Pages/Registration.aspx

# Registration ROP Revisions Overview

- Register entities that own or operate:
  - Non-BES IBRs with aggregate nameplate capacity >= 20 MVA connected at a voltage >= 60 kV
- Ensures 97.5% of impactful IBRs subject to Reliability Standards
- High degree of consensus on registration thresholds; comments centered on mechanics of implementation
- Proposal only affects registry criteria

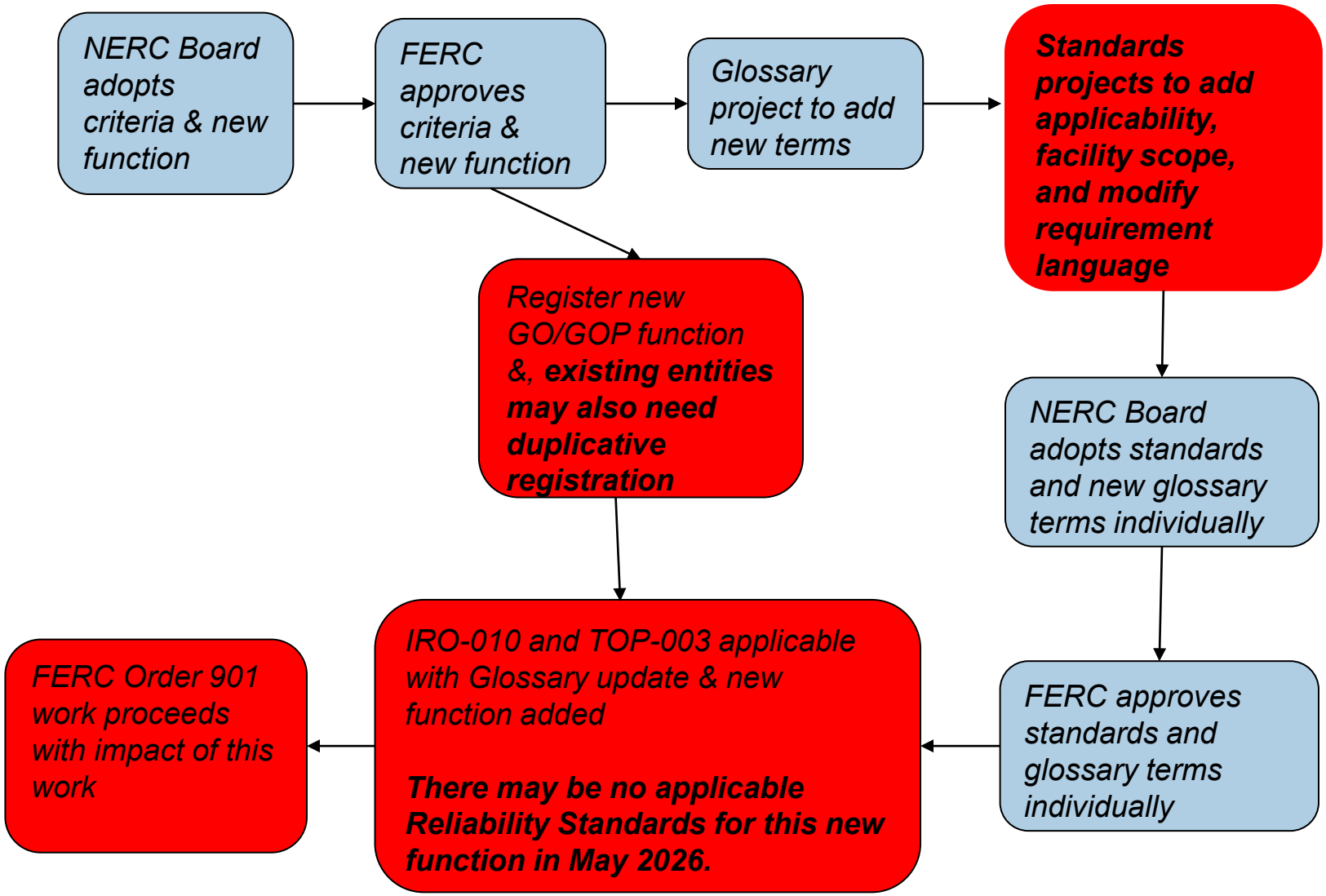
# Implementation Options Considered

- Approaches considered
  - Modify definition of BES
  - Add new registration function (GO IBR, GOP IBR)
  - Modify existing Generator Owner (GO) and Generator Operator (GOP) criteria (with categories)
- Criteria for path forward
  - Minimize impact to standards development
  - Fastest time to implement
  - Minimize burden on registered entities
  - Minimize burden on ERO registration staff

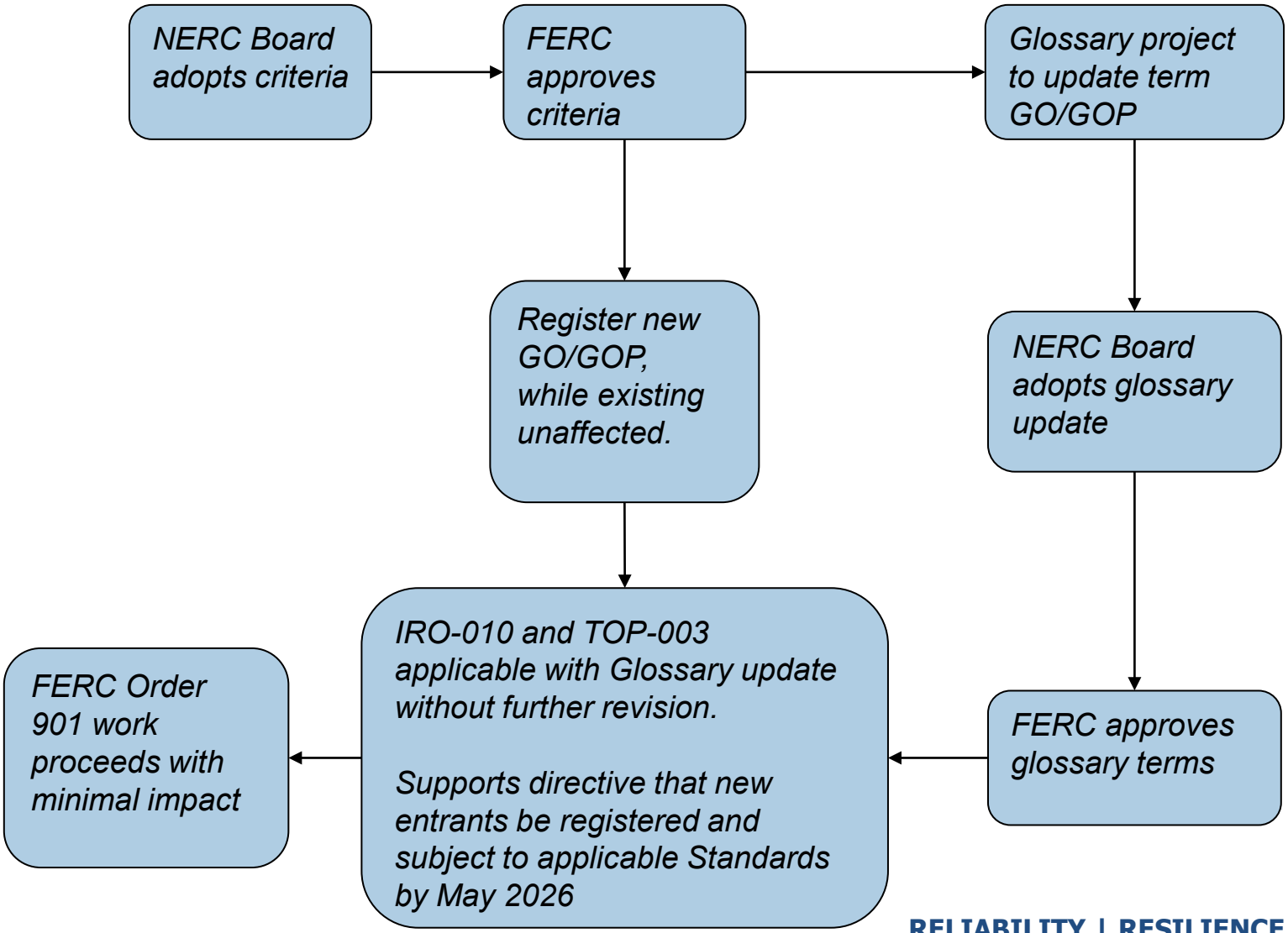
# Modify BES definition

- Divided opinion in industry
- May have unintended Standards impact
- May have unintended consequences on non-GO/GOP Registered Functions
- Last BES definition project > 2 years

# New GO/GOP IBR Function



# Modified GO/GOP Registry Criteria



# Comparison of Registration Approaches

| Modified GO/GOP Criteria | GO/GOP IBR Function |
|---|---|
| Existing GO/GOPs unaffected. Registration database will track category(ies) to which individual GO/GOP belongs | Existing GO/GOPs with IBRs will need to register for duplicative function, to the extent that they have facilities that meet GO/GOP IBR criteria |
| Clearly identifies new registrants as GO/GOP | Will increase documentation burden and depart from existing registration framework |
| Minimizes standards modifications (only change facility applicability, requirement language unaffected) | All requirements applicable will have to be modified as well as applicable entities and facilities |
| By reducing number of changes, improves likelihood of a small set of Reliability Standards applicable by May 2026 | Impairs likelihood of any applicable Reliability Standards for the new function by May 2026 |
| Glossary term project | Glossary term project |
| Does not preclude "subset list" approach | Not needed |

# Impact to Reliability Standards

- Modified GO/GOP Registry Criteria
  - Glossary term project for Generator Owner and Generator Operator
  - 9 standards applicable with no further modification
  - 4 standards only applicability modification needed
  - 7 standards require modification of requirement language

- New GO/GOP IBR Function
  - Glossary term project for GO IBR and GOP IBR
  - 20 standards projects to modify applicability and requirement language

# Additional Outreach

- Working with Communications to develop comprehensive strategy
- Existing entities
  - Use existing communication channels
  - Hold Small Group Advisory Sessions
- New Registrations
  - Education on NERC and processes
  - Encourage participation
  - Hold Small Group Advisory Sessions
  - Develop “one stop shop” for applicable standards and standards under development

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# Questions and Answers

# Appendix

# NERC Inverter-Based Resources Strategy

| Risk Analysis | Interconnection Process Improvements | Best Practices and Education | Regulatory Enhancements |
|---|---|---|---|
| Event Analysis | Improvements to GIAs and GIP | Reliability Guidelines | NERC Standards Projects |
| Disturbance Reports | Enhanced Interconnection Requirements | Webinars and Workshops | IBR Registration |
| Alerts | Modeling and Study Improvements | Outreach and Engagement | Inverter-Specific Requirements and Standards |
| Lessons Learned | IEEE 2800-2022 | Emerging Reliability Risk Issues | Risk-Based Compliance |

**2024 WPP in Action**

# Example – IRO-010-5

- Modified GO/GOP Registry Criteria
  - Project to modify glossary term of GO and GOP to include new criteria
    - Generator Owner - Entity that owns and maintains generating Facility(ies) or owns and maintains non-BES inverter based generating resources that have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV.
- New GO/GOP IBR Function
  - Project to add glossary term for GO IBR and GOP IBR
  - Standard development project to add GO IBR and GOP IBR to Applicability and R3

# Example – PRC-024-3

- Modified GO/GOP Registry Criteria
  - Standards project to add new 4.2.1.7 in Facilities section
  - 4.2.1.7 Non-BES inverter based generating resources that have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV
- New GO/GOP IBR Function
  - Standards development project to
    - add GO IBR and GOP IBR to Applicability section
    - Add 4.2.1.7 (same as above)
    - Add GO IBR and GOP IBR to R1, R2, R3 and R4

# Standard development - Category 1 only

- Use language in Applicability section that restricts to BES
- Example – PRC-024-3
- Most current standards already use this language
- Could add Exemption language (like in CIP-002-5.1a 4.2.3) to further clarify

# Standard development - Category 1 & 2

- Use language in Applicability section that lists both
  - BES generating resource(s) and
  - Non-BES inverter based generating resources that have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV
- Example – Suggested modification of PRC-024-3 in prior slide

# Standard development - Category 2 only

- Use language in Applicability section that restricts to
  - Non-BES inverter based generating resources that have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV
- Suggest this be separate standard(s) for clarity
  - Would suggest this even if using GO/GOP IBR registration
- Do not envision this being used except on rare occasions

# Year-End Review - 2023 Achievements and Work Plan Priorities

## Action
Update

## Background
NERC management will provide a summary of key accomplishments in 2023 and the year-end status of the 2023 Work Plan Priorities.

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# Year-End Review 2023 Achievements and Work Plan Priorities

Kelly Hanson, Senior Vice President and Chief Administrative Officer

Board of Trustees Meeting

February 15, 2024

**RELIABILITY | RESILIENCE | SECURITY**




# 2023–2025 Strategic Areas of Focus

**Energy:** Tackle the challenge of grid transformation and climate change-driven, extreme weather

**Security:** Move the needle by focusing on supply chain, Information Technology (IT) and Operational Technology (OT) system monitoring, cyber design, and evolution of the Critical Infrastructure Protection (CIP) Standards

**Agility:** Tool the company to be more nimble in key areas, particularly standards development, internal operational processes

**Sustainability:** Invest in ERO systematic controls, eliminate single points of failure, strengthen succession planning, and ensure robust cyber security protections for all systems

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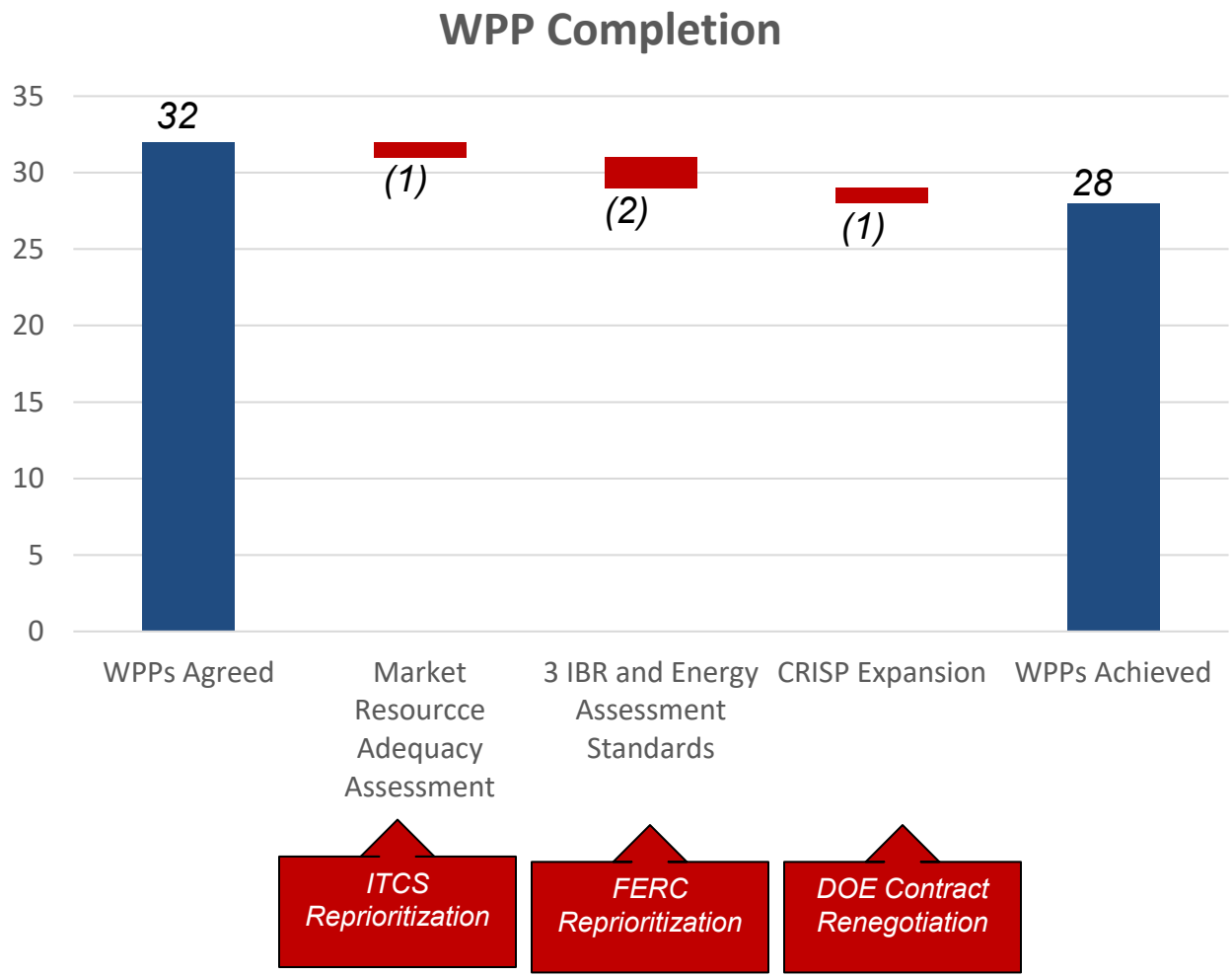
# 2023 Highlights

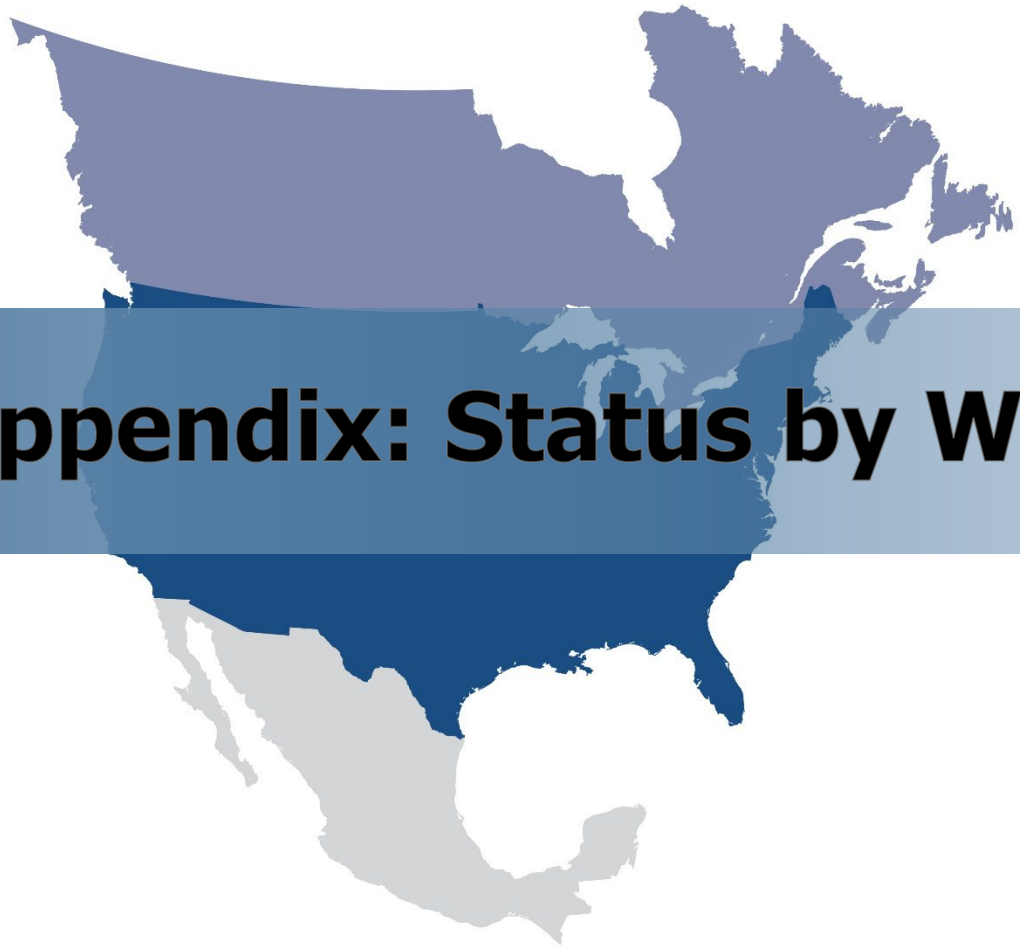
| | |
|---|---|
| **Energy** | More in-depth, expanded BPS situation awareness, analytics and modeling, and emerging risk mitigation |
| **Security** | Continued growth of the E-ISAC and planning for a more secure, less vulnerable BPS |
| **Agility** | Increased standards development process efficiency, and financial flexibility |
| **Sustainability** | Strengthened government and industry partnerships and operational sustainability gains |

# Unanticipated Work

- **Several directives/mandates from FERC related to:**
  - Registration of Inverter-Based Resources (IBRs)
  - Studies/standards related to Internal Network Security Monitoring (INSM)
  - Evaluation of physical security standards and security attacks on the BPS
  - Winter Storm Elliott Inquiry
  - Cold weather and transmission planning standards
- **And one significant mandate from Congress:**
  - Perform an Interregional Transfer Capability Study (ITCS) and deliver to FERC by December 2, 2024
  - The ITCS is an unprecedented, significant body of work to complete in 18 months, requiring additional resources and reprioritization of projects

# 2023 WPP Year-End Status





# Appendix: Status by WPP

# Status by WPP

## Reliability Assessments

Reliability assessments incorporate consistent and documented methods to identify and evaluate extreme condition scenarios and energy availability

Perform a special assessment of the potential impacts on the adequacy and operating reliability of the BPS from new and evolving electricity market practices and state authority resource adequacy assurance/availability mechanisms

Conduct extensive outreach to raise awareness and prompt action to assure reliability for the 2023 summer and 2022/2023 winter seasons

# Status by WPP

## Reliability Standards

Board endorses or adopts:

2023 enhancements to Reliability Standards identified by Cold Weather Inquiry

Energy Reliability Assessment Task Force (ERATF) Energy Assessment Reliability Standards in operations planning timeframe

Inverter-based resource Reliability Standards (performance, modeling, studies, validation)

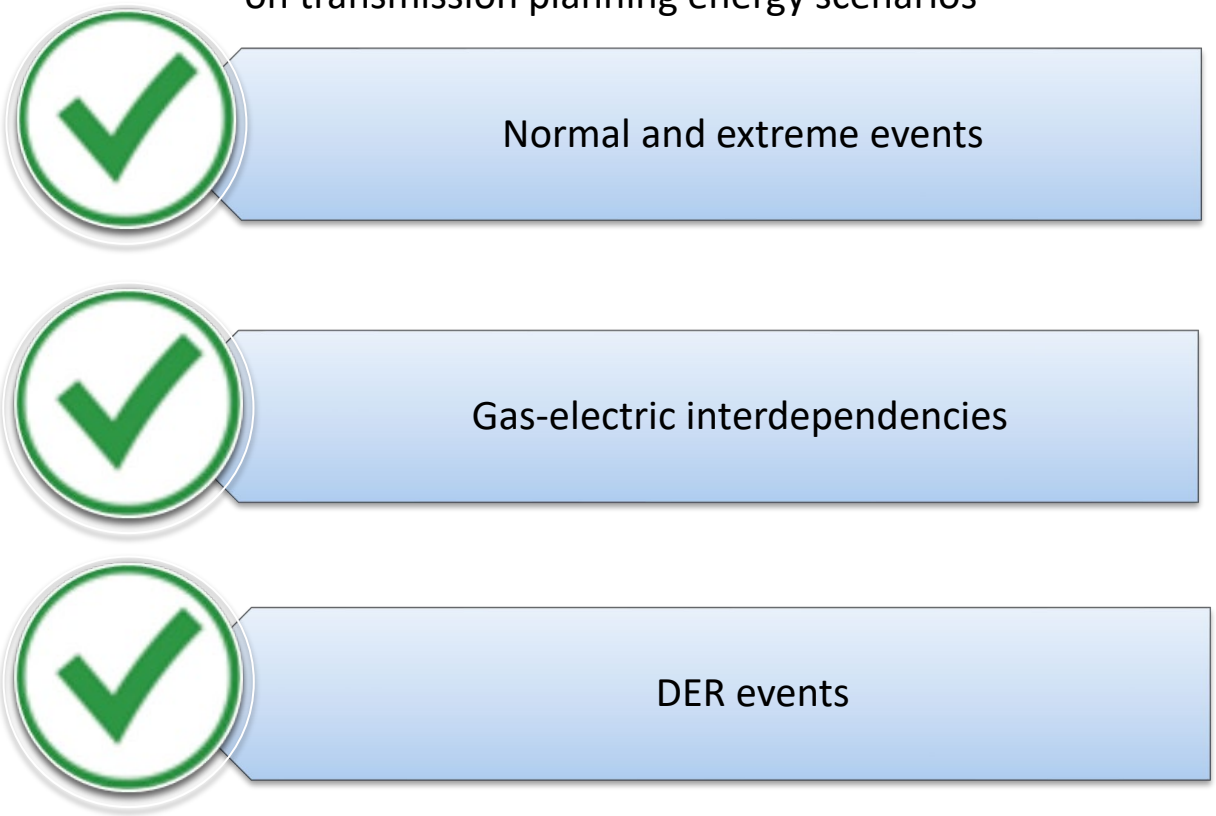
CIP Reliability Standard modifications to accommodate virtualization

Changes needed based on evaluation of the CIP bright-line risk criteria

# Status by WPP

## Reliability Standards

Standards Committee accepts SARs focused on transmission planning energy scenarios*




*Includes extreme events creating common conditions that impact the energy resilience of the BPS, such as extreme long-term, widespread cold and hot temperatures, widespread droughts conditions, solar, wind, and fires

# Status by WPP

## Registration

Review and update, if needed, registration criteria for generation to include BES-connected variable energy resources (VERs) and DERs

## Event Analysis and Situation Awareness

Include loss of significant amounts of energy-constrained resources and energy deficiencies

BPS awareness daily reports to include new system conditions and expand depth and breadth

## Engineering

Develop cyber-informed planning approaches documented in technical reports or other guidance material to study, identify, and reduce the number of critical facilities and attack exposure/impact

# Status by WPP

## BPS Risk Mitigation

Implement a revised and more agile Reliability Standards development process

Establish Level 3 alert process

Strengthen reliability guidelines (essential actions, measures of effectiveness)

Leverage CMEP tools for early visibility of BPS risk

# Status by WPP

## E-ISAC

Increase the analysis of IT/OT environments and extract key, actionable insights

Support Department of Energy/Cybersecurity, Energy Security, and Emergency Response (CESER)'s ETAC and DHS/CISA's JCDC

Strategically expand CRISP participation, including natural gas pipeline companies

Provide support to the natural gas sector for OT analytics and access to E-ISAC Portal

Formally integrate the natural gas sector into GridEx VII planning

# Status by WPP

## Corporate Risk Reduction

Provide additional data management, classification, and protection tools and processes

Implement audit management software solution to automate Internal Audit processes

## Talent Management

Successfully onboard 14 new employees

Maintain regrettable turnover at <10% and sustain employee engagement score

# Status by WPP

## State/Provincial Outreach

- Expand outreach to national associations, including NARUC and CAMPUT, to further educate state and provincial regulators and policymakers on NERC assessments
- Build bench strength in NERC's External Affairs team with a focus on state outreach and stakeholder engagement

## Process Improvement & Efficiency

- Decide on future direction of Finance and Accounting/HR systems and begin execution
- Complete Atlanta facility workplace assessment, survey market conditions, and conduct site tours of alternate options